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a quarterly journal of
PLANNING, HOUSING & PUBLIC UTILITIES



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**Cost-of-Capital Techniques Employed in Determining
the Rate of Return for Public Utilities**

Lionel W. Thatcher

**The Role of Government in Influencing Changes
in Housing in Baltimore**

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MAY 1954

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Contents

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The Price Level in Macroeconomic Models	Louis Hough
Excise Taxes: Capitalization-Investment Aspects	J. A. Stockfish
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CONTENTS

MAY 1954

Cost-of-Capital Techniques Employed in Determining the Rate of Return for Public Utilities.....	LIONEL W. THATCHER.....	85
Land Reform in Bolivia.....	EDMUNDO FLORES.....	112
The Role of Government in Influencing Changes in Housing in Baltimore: 1940-1950.....	MORTON HOFFMAN.....	125
Plantation Agriculture in the United States: Seventeenth to Twentieth Centuries.....	PAUL S. TAYLOR.....	141
Rural Zoning in Minnesota: An Appraisal.....	CARL H. STOLTENBERG.....	153
Mechanics of the Urban Economic Base: General Problems of Identification.....	RICHARD B. ANDREWS.....	164

Reports and Comments

The Control of Ohio River Pollution.....	PAUL GARFIELD.....	173
Industrial Location Trends in Chicago in Comparison to Population Growth.....	LEO G. REEDER.....	177
Homer Hoyt on Development of Economic Base Concept.....	HOMER HOYT.....	182
Bibliography on the Economic Base.....		186

Book Reviews

<i>The Decline of Agrarian Democracy</i> (Grant McConnell).....	C. Maurice Wieting.....	192
<i>Bolivia, Land, People and Institutions</i> (Clen Leonard).....	Laurence Witt.....	193

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VOLUME XXX
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Cost-of-Capital Techniques Employed in Determining the Rate of Return for Public Utilities

By LIONEL W. THATCHER*

DURING the last few years a number of regulatory commission decisions and orders on "fair rates of return" derived primarily from the cost-of-capital formula have been severely and even bitterly criticized by public utility experts, by management and investment analysts.¹ Some of these critics contend that the cost-of-capital formula has little or no validity as a test of fair rate of return necessary to attract capital. Others claim that commissions have recently applied the formula too mechanically and without recognition of its limitations; or that the formula, as frequently applied, is only a starting point but of little use as a predominant or exclusive test of a fair return.

It is the writer's opinion that while many of the criticisms have force, they do not belie the usefulness of the cost-of-money formula when properly applied.

The most controversial aspect of the whole problem is the question of whether or not the so-called cost-of-capital return

can be adjudged as fair and reasonable without an upward adjustment for inflation. Those who take the affirmative position on the latter point contend that the historical cost-of-capital doctrine "though expedient during periods of stability is inherently fallacious" during inflationary periods when the value of money changes, and that the usual policy of "adjusting the rate of return to the cost of money does not and cannot compensate for inflation."² In other words, the question then is whether common stockholders are entitled only to the protection of the nominal dollar amounts of their investments or whether they are entitled to an additional amount as protection of the "real values" of these investments.

Since not only the measurement but the very meaning of "cost of capital" are subjects of controversy, it is believed that an article devoted to questions of principles and to the application of these principles in actual rate-of-return cases would be helpful at this time. Following a discussion of various techniques and

* Professor of Commerce and Economics, University of Wisconsin.

¹ In addition to testimony presented by Company witnesses in public utility cases, see a series of articles in *Public Utility Fortnightly*, reprinted in pamphlet form under the title: "Should Cost of Capital Limit a Utility's Return?" (*Public Utilities Fortnightly*, D. C., 1953).

² W. A. Morton, "Rate of Return and Value of Money in Public Utilities," *Land Economics* May 1952, pp. 91-131. Prof. Morton urged the inflation adjusted not as a basis to attract capital but to maintain the integrity of existing or old stockholders who were frozen into their position.

procedures in determining the cost of capital there will be found an analysis to show that the proper application of the cost of capital to an investment rate base is entirely appropriate and does not result in an expropriation of utility property and will give a return sufficient to enable a well-managed company to maintain good credit and to attract the required amounts of new capital.

Definition of Cost of Capital

The term "cost of capital" has been used in various ways in recent rate cases. From a broad viewpoint it is an economic concept subject to statistical determination and may be defined as the annual percent which a utility must receive to maintain sound corporate credit and permit a public utility company, under efficient management,³ to pay enough to induce investors to place capital at the disposal of the enterprise without impairing the integrity of existing investors.⁴ Used in a technical sense, it is a composite of the cost of the several classes of capital employed—debt, preferred and common stock and surplus (retained earnings), properly averaged on the basis of an appropriate capital structure.

To illustrate how the threefold division of total capital can be set up so as to permit an analyst to compute separately the cost of each type of capital, let us assume a typical capital structure composed of 48.7% long-term debt, 13% preferred stock and 38.3% common stock

and surplus.⁵ Let us also assume that this typical company's long-term debt has a net annual cost of 3½%, the preferred stock 4½%, and that the common stock equity return is the approximate average return for the electric industry in 1952, namely 10%.

TABLE I—ESTIMATED COST OF CAPITAL

	Percent of Capital Structure	Annual Cost percent	Cost Component percent
Long-term debt.....	48.7	3.5	1.701
Preferred Stock.....	13.0	4.5	0.585
Common stock and surplus.....	38.3	10.0	3.830
Over-all cost of capital.....	100.00	6.116

This cost-of-capital formula is often distinguished from a fair rate of return. When the cost of capital is estimated very closely at a minimum figure, and with no allowance for earnings in excess of current dividend requirements, there is usually added an allowance in order to reflect a capital-attracting rate of return.

As a starting point in estimating a fair cost of capital for a utility, a sound device is to derive a "cash cost of capital" or a bare-bones cost to the company. This "cash cost of capital" must be based on the security issues outstanding at the time of the rate case.

To illustrate this method there is shown in Table II the cash cost of capital to the Pacific Telephone and Telegraph Company as of June 30, 1953. This cash cost is based on the actual disbursements payable on the capital outstanding on that date. The cash cost of the common stock is computed at the actual \$7 per share dividend payment, and interest obligations for the \$465,000,000 long-term debt at the rate indicated from information received from the company.

⁵ Class A & B electric utilities computed from data compiled by the Federal Power Commission for the year 1952.

³ Most analysts would agree and opinions or commissions confirm the concept that a utility operated with marked efficiency and with special concern for the public interest is properly entitled to earn more than the rate of profit found necessary to maintain its credit. By the same token, an inefficiently operated or an unwisely financed utility may properly be limited to a substandard rate of return. This position, while warranted, creates the difficult problem of measuring relative efficiency.

⁴ It is understood that any estimate of cost of capital requires the exercise of judgment based not only on the statistical data but on intangible or subjective factors that cannot be measured precisely by statistics.

TABLE II—THE PACIFIC TELEPHONE AND TELEGRAPH COMPANY CASH COST OF CAPITAL BASED ON SECURITY ISSUES OUTSTANDING JUNE 30, 1953

Items	Par or Principal Amount	Interest or Dividend Rate	Total Cash Cost of Capital
Capital stock and surplus.....	\$ 621,222,500	%	\$43,485,575
Par value.....	28,615,648	(a)	—
Surplus Total.....	\$ 649,838,148		
Preferred stock.....	82,000,000	6.00	4,920,000
Funded debt:			
3¼% debenture.....1978	75,000,000		
3¼% debenture.....1979	35,000,000		
3¼% debenture.....1981	30,000,000		
3¼% debenture.....1983	75,000,000		
2¾% debenture.....1985	75,000,000		
2¾% debenture.....1986	75,000,000		
3½% debenture.....1987	100,000,000		
	\$ 465,000,000	3.045	\$14,161,253
Notes payable to banks.....	76,000,000	3.25	2,470,000
Total capital structure and cash cost of capital....	\$1,272,838,148	5.12	\$65,038,091

(a) Computed at \$7.00 dividend.

Source: Prospectus—\$50,000,000—Thirty-one year 4% debentures September 15, 1953.

The cost of the preferred stock is computed on the actual cost of \$6 per share.

The cash cost of capital of about 5 percent should not be confused with the term "cost of capital." In order to carry on a business successfully and attract capital necessary to finance needed additions, a utility must have earnings in excess of bare interest costs and dividend requirements. Since interest rates and preferred dividend rates are fixed, the problem really evolves into a question of how much the common stock should earn and the excess of earnings over dividend requirements. Or stated differently, what percentage of earnings should be paid out in dividends? These two factors—a reasonable dividend rate and, the proper amount or rate to be retained in

the business—are basic determinations for the cost of equity capital. Most of the controversy on cost of capital has related to these two issues.

Some rate-of-return analysts are not content with a liberal over-all cost of capital which includes an allowance for earnings ranging from 20 to 30% in excess of dividend requirements, but add another amount to make sure the rate of return will attract capital. This second allowance is not associated with an adjustment for inflation. Without this additional allowance the formula is said to result in a "bare-bones" cost of capital or a minimum rate of return. Such an allowance should be seriously questioned. When a utility company's total invested capital—debt, preferred

and common equity (including 20 to 30% retained earning)—has had an annual cost computed in harmony with familiar principles of corporation finance and with generally accepted principles of rate regulation, it is most difficult indeed to accept this percentage rate as a "bare-bones" cost of capital and as not representing a capital-attracting rate of return.

Judicial Tests of Costs of Capital

When cost of capital is not differentiated from the term "fair rate of return," it has been defined as a legal concept and generally represents the dollar amount which a public utility is entitled to earn on its investment. This concept of cost of capital, while in the interest of the consumer, cannot become a confiscatory rate, nor can it impose on the rate payer rates for the utility services which are unduly high or discriminatory according to regulatory standards.

The term cost of capital used as fair rate of return is commonly expressed as the ratio of earnings, after operating expenses, depreciation and taxes, to a predetermined rate base. However, this percentage figure should be adequate in amount of dollars to pay interest and dividends on the company's debt and preferred stock, and also to provide a return to common stock equity "commensurate with returns on investments in other enterprises having corresponding risks." These requirements have been well stated in the general language with which all informed persons are familiar, namely: "The return should be reasonably sufficient to assure confidence in the financial soundness of the utility, and should be adequate, under efficient and economical management to maintain and support the company's credit and enable it to raise the money necessary for the proper discharge of its public duties."⁶

⁶ *Bluefield Waterworks & Improvement Company vs. Public Service Commission of West Virginia*. 262 U. S. 679-695.

Mr. Justice Douglas, speaking for the United States Supreme Court in *Federal Power Commission v. Hope Natural Gas Company*, 320 U. S. 591, 603, stated:

From the investor or company point of view it is important that there be enough revenue not only for operating expenses, but also for the capital costs of the business. These include service on the debt and dividends on the stock. By that standard the return to the equity owner should be commensurate with returns on investments in other enterprises having corresponding risks. That return, moreover, should be sufficient to assure confidence in the financial integrity of the enterprise, so as to maintain credit and attract capital. The conditions under which more or less might be allowed are not important here.

If cost of capital is covered as defined, it would be adequate for a corporation to (1) maintain the market price of common stock at a reasonable level above its book value; (2) permit the accumulation of a sound surplus account after payment of reasonable dividends on common stock; and (3) permit the company to maintain a proper capital structure, with common stock constituting such a percent of total capital as will give reasonable protection to the various capital components and yet maintain adequate borrowing power. Moreover, a cost of capital adequate to attract capital to a public utility enterprise is obviously closely related to whatever rate of return an investor would anticipate from alternative investments of reputedly comparable risk.

Cost-of-Debt Capital

An analyst usually finds no difficulty in determining the cost of debt or even preferred stock capital with reasonable precision. The cost of debt capital acquired through bonds, debentures, or certificates of indebtedness at the time of original investment in the enterprise, may be expressed by the ratio of con-

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tractual interest to the amount paid by investors to obtain the prospect of that interest return. Actual fixed charges to the enterprise is the price to investors plus the financing costs incurred by the utility so it might raise the debt capital. The dollar figures are then converted into percentages of debt as measured by the net contribution which the utility company has received.⁷ Such actual or experienced costs, commonly expressed as annual costs, are factual and unchanged during the term of the contracts.

The inclusion of such items of unamortized discounts, and call premiums on retired bonds and preferred stock as part of the actual or experienced costs of debt capital has in the past created considerable controversy. These costs are of decreasing consequence at the present time and in the future will have less significance since most discounts and call premiums were incurred years ago and will have been properly amortized.

The arguments for including such adjustments as part of the actual costs of capital run as follows:

(1) On the basis of logic it is necessary to make an allowance for the selling expenses, unamortized discounts and call premiums on retired bonds and retired preferred stock that were charged to surplus for bookkeeping purposes, but that would not yet have been amortized under a regular program of amortization over the periods prior to the original dates of the retired stocks and bonds.

(2) In computing a fair rate of return, these old discounts and call premiums should now

be restored to surplus even though they were actually charged off as a loss at the time when the old securities were retired.

(3) The company's current accounts cannot be relied upon to determine the costs for a rate case because they fail to give the true investments of the stockholders. Rather than charging off as a loss the payment of call premiums, they ought to be treated as a sort of "intangible investment" — an investment in the cancellation of the costly stock and bond contracts.

Arguments against these adjustments:

(1) Present and future consumers should not be required to contribute through a higher rate of return for the call premiums, discounts and expenses that have actually been charged to surplus ten, twenty and thirty years ago.

(2) The rates of return that the company has enjoyed under commission regulation should be deemed to constitute full compensation for the payment of these call premiums, discounts and expenses that have been charged to surplus years ago in conformity with the rules of the commission.

(3) The company gained financially by such redemptions of bonds and preferred stocks or such action would not have been taken.

(4) If an allowance is made for these costs then the pay-out ratio should be proportionately increased, since these erosions of equity have usually been restored to surplus by retention of earning in the past.

In rate cases, a few rate-of-return witnesses have contended the allowance for costs of outstanding issues of senior capital — bond interest and preferred dividends — should be based, not on charges actually incurred for the securities then outstanding, but rather on the hypothetical costs of doing senior financing under current conditions of the bond and stock market. There is merit in this position under the logic of a reproduction-cost theory of rate making; and it has debatable arguments on a "fair value" rate base, which gives some, though not controlling weight to reproduction valuations.

However, in computing the actual cost of capital to a given utility, the purpose

⁷ The method in computing the actual fixed charges plus the cost of financing will be illustrated with the Pacific Telephone and Telegraph Company's twenty seven 3½% debenture issue of \$35,000,000 November 15, 1952.

Price to the underwriter per share.....	101.533
Total proceeds.....	\$35,536,550
Corporate costs.....	\$ 144,941
Proceeds less corporate costs:	
Dollar amount.....	\$35,391,609
Unit basis.....	101.119
Cost to maturity.....	3.17%
Price to public.....	102.176
Yield to maturity.....	3.13%
Flotation cost.....	0.04%

is to determine, as Professor Bonbright has stated, "not what the capital would cost if it had to be secured *de novo*, but rather what it really does or will cost in view of fact that much of it has been secured at an earlier date and under market conditions differing from those prevailing today. In determining fair rate of return, commissions are more concerned in finding what the present utility needs in order to meet interest and preferred dividend requirements."⁸

In respect to the acquisition of new debt and preferred stock capital, this reproduction cost approach is relevant, since the costs thereof are determined by reference to the current capital markets. The yields at which utility bonds and preferred stocks with similar risk characteristics are currently sold on the market, with proper adjustments for financing costs, will represent the cost of new senior capital to the enterprise. A good indication of the probable cost of new debt capital can be obtained by studying the current market yields on the outstanding bonds of the utilities under consideration.

Another approach for estimating the current cost of debt capital which the company expects to acquire in the near future is to study the history and behavior of bond yields in general and particularly bonds with the same ratings for the given company's outstanding bonds. Sources for this information are Moody's and Standard and Poor's average yield on the variously rated utility bonds.

Use of Moody's and Standard and Poor's bond yields requires an upward adjustment of several yield points to represent the cost of flotation. Differentials between yield at offering price

and the net cost to the given company measure cost of flotation.

As indicated above, the cost of preferred stock capital is calculated in much the same way as debt, namely, on the basis of a fixed prospective dollar return per dollar of capital. The cost of such capital at the time of original investment is measured by the ratio of the stated annual dividend to the amount paid per share by the investors. To this actual or experienced cost is generally added charges for unamortized discounts or credits for unamortized premiums, underwriting and corporate costs, and possibly unamortized call premiums charged to surplus. Preferred stocks commonly are expected to be outstanding for an indefinite period, thus the prices paid by investors represent a capitalization of prospective dividends as though they are to be paid indefinitely.

There is no entirely satisfactory method of determining on the basis of currently issued preferred stock the probable cost of additional preferred stock capital to a given company. Where a company has preferred stock outstanding, and there is active trading on the market, the yield on such stocks constitutes reasonably good evidence of the probable cost of additional preferred capital to the company, provided some allowance is made for issuing or flotation costs.

Cost of Common Stock Capital

The cost of capital acquired through the issuance of common stock is the really difficult problem of estimating over-all cost of capital. The first difficulty arises from the absence of any fixed contractual annual rate of dividends; and secondly, from the necessity

⁸Testimony of Dr. J. C. Bonbright, Commonwealth Edison Company in Illinois Commerce Commission Case No. 41130.

of an earning allowance in excess of current dividend requirements.⁹

The absence of a fixed rate of dividends sometimes has led to the statement that common stock capital has no cost to the enterprise. Such a definition identifies cost with a contractual or fixed expenditure and contends that no cost is experienced in the absence of such a cash dividend.

Common stock, like preferred stock and bond investment, represents an exchange of current money, by investors, for an expected payment of future monetary returns. A common stock makes no contractual "promise" of future payment, but the basis of a stock investment is similarly the discounted future expected returns. The essence of the position of common stockholders is that they receive the residual earnings—the balance that may remain after interest, preferred dividends, and all other prior requirements have been provided. A portion of such residual earnings may be paid out as dividends while the balance is retained for the stockholders in the business.

The market price of common stock capital at the time of original investment in the utility is measured by the rate at which expected dividends and the prospective price appreciation were capitalized in the open market. The actual proceeds to the firm, as in the case of

debt and preferred stock capital, is the price less the flotation costs incurred.

It is clear, however, that the actual or experienced cost of common stock capital is not necessarily reflected in the accounting records. It must be imputed, since the prospective return to common stock investors is measured by the composite evaluations on the open market (without considering fixed income contracts). Market prices of stock are free to move upward or downward according to investors' evaluation of the reward offered in earnings or dividends. In evaluating earnings or dividends the investor habitually considers many factors, such as stability of earnings, the level of return in comparison with that afforded in other fields of investment, the ease of liquidating the investment, the possibility of capital gains and losses, the security of both return and principal and many others. The market price of stock then reflects the sum total of all investors' expectations and evaluations. Consequently, an analyst cannot rely on any current dividend rate, with or without allowance for surplus earnings as a direct measure of the cost of equity capital. In fact, he must estimate current cost of equity capital on the basis of probable future changes in corporate earnings, and dividend payments—changes owing to economic conditions and to regulatory actions.

As mentioned in a paragraph above, one test for determining a capital-attracting return on common stock equity is an amount adequate to maintain the market price of common stock per share at a reasonable level above book value. Some analysts have urged that during periods of prosperity the so-called capital-attracting return should be ample to provide for a greater excess in the market value of corporate stock over its book value. Since there is no accepted formula

⁹ The allowance for adequate earnings, including retained earnings on common stock equity, depends to a great extent on the capitalization of the firm. These earnings are designed not only to insure an adequate return to common stockholders, but also to provide a safety factor for the bonds and preferred stock. It is generally agreed that the protection which a corporate bondholder has, as well as the protection to a preferred stockholder, depends to a considerable extent on the amount of common stock which the common stockholders have in the corporation. The amount of common stock money in the corporation supports and protects the amount of money the bondholders and preferred stockholders have in the corporation. Protection for bondholders and stockholders may also be measured by the number of times the corporation earned fixed charges on its bonds and preferred stock. At the same time, the common stockholder's risk is higher where his investment is small compared to the amount of bonds and preferred stock outstanding.

by which this required excess of market value over book value can be determined, it is a common practice of the analyst to make an additional allowance above minimum cost or bare-bones cost-of-equity capital as a means of encouraging a sizable excess in the market values of common stock over the book values. In estimating the earnings per share that will achieve this objective, analysts have considered several essential relationships. The first of these is the dividends-price ratios of the particular stock under review as well as of the stocks of comparable utility companies.

To illustrate the computation of this ratio, if a stock has an average market value of \$150 and the annual dividend is \$9.00, the yield or ratio is 6% (\$9.00 divided by \$150). This ratio represents the yield received by the investor at the average market price. Insofar as investors are guided by dividends' yields any change in the dollar dividend will, in general, be reflected by a corresponding percentage change in the market price, so that other things being equal the dividend yield will remain fairly stable regardless of changes in dividends. These ratios should cover representative periods of operation. Ratios used on a "spot" basis, for a period of a month, or even a year, might produce very unsatisfactory results. Prices of utility stocks of the most stable type are influenced by short-run considerations—threats of war, tax legislation, changing governmental regulations, strikes, elections—all affect stock prices in one way or another. For dividend yields or earnings-price ratios to be really significant they must be considered over a sufficiently long period of time for the abnormal and unusual pressures to average out.

It is manifestly impossible to consider dividend requirements as an unadjusted measure of the cost of common stock

capital. As already mentioned something over and above dividend requirements should be carried to surplus. Hence the cost of equity capital in terms of dividends must be adjusted upwards by the application of a fair pay-out ratio—the percentage of earnings the company pays out in dividends. In other words, it is necessary to assume that dividends are some reasonable percent of earnings, or that the dividends-price ratio is a reasonable percentage of the earnings-price ratio. If 25% or 25 cents on the dollar for retained earnings is assumed as reasonable the derived earnings-price ratio (before consideration of flotation costs) would then be 8% (6% divided by .75 the pay-out ratio.)

The second essential element in estimating earnings per share on common stock is the earnings-price ratio. It reflects the percentage relationship between the reported annual earnings per share and quoted market price. The use of this ratio usually implies that investors tend to buy stocks on the basis of earnings rather than on the basis of dividends. In comparison with dividend yields, earnings-price ratios provide the more direct, though not necessarily the more reliable method of measurement. If a study shows that the earnings-price ratio per share of a given utility company has been running consistently at approximately 8%, or that stock has been selling at approximately twelve and one-half times reported earnings, it follows that the stock will continue to sell at approximately its book value if future earnings per share amount to 8% on book value.

The earnings-price ratio is increased to allow for flotation costs and underpricing or "pressure." The computation of the allowance is relatively simple. Assuming an 8% earnings-price ratio and a

10% allowance, the adjusted ratio is 8.89% (8% divided by .90).

In computing either dividend yields or earnings-price ratios, market prices are generally the average of the high and the low for the month or the year. Dividends per share are the actual dividends reported. Earnings per share are usually based on the average number of shares rather than the number of shares outstanding at the end of the year. Market prices are usually related to earnings of the same year. Some critics have urged the procedure of making the market quotations "lag" the year of comparable earnings on the basis that informed investors will not be influenced by these earnings until they have been entered into the income statements. However, informed investors have a good idea of the general trend of earnings before they are published.

In recent rate cases, rate-of-return witnesses have employed with reliable application during periods of rapid capital expansion a variation of the earnings-price and dividends-price methods. It differs from the usual earnings-price technique in that reported earnings and dividends per share are related, not to the price quotations of ordinary stock transactions, but rather to the net prices from new issues, after all expenses, received by the companies. All stocks offered, whether through preemptive rights or through underwritten offerings, are computed on an "earnings-net-proceeds" or "dividends-net-proceeds" basis. Such a procedure eliminates the time required and expense of determining underpricing and cost of financing since this ratio already reflects these costs. This procedure must be used carefully, however, in order to assure that some new stock issues were not purposely underpriced to the old stockholders below the actual price that could have been obtained in the market.

While both dividends-price and earnings-price ratios (including earnings-net-proceeds ratios) are useful tests in estimating cost of equity capital, they must be used with care because of certain limitations in proof of an adequate rate of return to attract capital. The most serious limitation is the fact that these ratios are based on past earnings rather than on the basis of anticipated future earnings. The mere fact that a current or recent dividend-price ratio may be extremely low or high—say 4% or even 7%—does not prove investors' acceptance of or demand for such a continuous return on their investment. The purchaser of stock at an extremely low yield of 4% may realize the situation is the result of unusual circumstances such as a strike, or on the basis of an anticipated increase in the dividend rate, or the purchaser may even be counting on the receipt of valuable stock "rights" to future subscription privileges as a sort of "melon" to his quarterly dividends. It is also probable that a utility has deficient earnings, and has taken steps by filing for increased rates to correct this situation and that the market price reflects the expectations of favorable commission action. When the estimated cost or return on equity capital is derived from the average of these ratios over extended periods of time, the limitation is not too serious. The analyst can, however, consider subjectively the extent to which investors might be "discounting" expected increases or decreases in utility earnings.

Both dividends-price and earnings-price ratios should be considered by the analyst. Exclusive reliance upon either is likely to lead one astray. Insofar as it is true that investors buy securities because of the dividends paid, earnings in excess of dividend requirements are of doubtful value as an inducement to investors. A utility could determine its

own cost of capital by adjusting the percentage of earnings paid out in dividends. Under these circumstances the earnings-price ratio is not indicative of the cost of equity capital.

In some cases, such as the American Telephone and Telegraph company, the dividends-price ratio is probably the best measure of the cost-of-equity capital. A long history of stable dividend payments, through "thick and thin," may create a presumption that the same rate of dividends will continue for the indefinite future. Investors are buying the stock primarily because of the fixed rate of dividends. Such dividends are in a sense a quasi fixed charge and may be compared with interest charges and preferred stock dividend requirements. There would still remain the problem of the proper allowance for retained earnings.

There seems to be clear reason to believe that investors buy utility stocks largely on the basis of dividends. At least the securities market favors stocks with high dividends-payout ratios over stocks of companies reporting the same earnings but paying low current dividends. Several statistical studies, including one made by E. W. Clemens and the author, as witnesses in an earlier case before the Washington Public Service Commission, bear out this conclusion. In the February issue of *this Journal*, Professor Clemens demonstrated that market prices of utility common stocks are influenced more by dividends than they are by earnings.¹⁰

The Proper Payout Ratio

The third factor in arriving at the cost of equity capital by the indirect method of determining an adequate current rate of dividends is estimating a proper allowance for a payout ratio. It is mathe-

matically dependent upon the dividends-price and earnings-price ratio so that anyone of the three can be determined if the other two are known. This ratio reflects the practices of utility companies to retain part of their earnings in order to build up the company's surplus account. Obviously something over and above dividend requirements is necessary in times of prosperity.

In studying the payout ratios of the different utility industries over a period of years one should note the wide difference in practices among the utility industries and that companies within each industry differ materially among themselves on this point. The author's studies reveal one thing in common among all utilities, namely, a postwar tendency to retain for credit to the surplus account a greater part of earnings on common stock equity. This tendency was more prevalent in the electric industry than in the other utility industries, owing to the fact that prior to 1946 rather drastic write-downs in book values resulted from original cost accounting for plant required by the Federal Power Commission.

The common practice in determining the proper payout-ratio is to calculate the typical ratio of each industry over a period of years, and hence the representative "good practices" of each for companies with similar capital structures. For purposes of true comparison, however, it would seem necessary to show historically the percentage of dividend payout for each utility both in relation to reported annual earnings and in relation to earnings after giving effect to direct surplus charges. Such a study shows that, for the American Telephone and Telegraph Company, the percentage of dividend payout is not substantially different whether it is based on the reported earnings or on the net surplus earnings for each year. For the period

¹⁰ *Land Economics*, February 1954, p. 34 & 35.

1928 to 1952, the weighted average percentage of dividends to reported earnings was approximately 94% while the percentage of dividends of available surplus earnings averaged 98% for the same period. This close relationship is not true, however, for other telephone companies or for other utilities because companies other than the Bell System have had substantially larger charges to surplus. For example, Class A and B privately-owned electric utilities for 1937 to 1952 inclusive paid in common dividends, expressed as a percentage of reported common earnings, an average of 73%; but expressed as a percentage of common earnings less direct surplus charges, an average of 86%. For the period 1948 to 1952 however, the average was 77%, thus reflecting smaller charges to surplus for purposes other than dividend payments.

While past and current payout ratios are useful as a test for proper future ratios they are not conclusive. One must arrive at a ratio that can be justified from the standpoint of utility management and the long-run interest of the consumer.

The question of the amount of retained earnings in a public utility rate case is difficult because it is designed to serve at least three purposes. The first is a retention of earnings to offset what has been called an "erosion" or impairment of surplus resulting from direct surplus charges. In other words, reported income of public utilities has exceeded the actual income. Reference has already been made to the decade prior to 1946 for the electric industry when it was faced with the necessity of making write-offs to adjust property accounts to original cost and for other reasons. These charges were often more than the retained earnings and amounted to a considerable percentage in most years. In addition to these write-offs, a large part of non-re-

current charges to surplus during recent years was due to accounting losses resulting from the redemption of bonds or preferred stocks called prior to maturity for purposes of refunding at lower rates of interest or dividends. Despite these heavy drains upon the surplus account, the policy of retaining approximately 25% of earnings before these charges was adequate to building up the sound financial standing of the electric industry.

The second purpose of an allowance for retained earnings is to make the dividend record more stable than the earnings record. This is generally done in the interest of securing a good market for common stock. Thus in prosperous years some part of the net income should be retained in order to avoid the pattern of a dividend rate which the company would have to abandon as soon as the going becomes harder in recession periods. There is no established formula to determine what part of income of a utility should be reserved for dividend stabilization purposes. Theoretically, the net income over a long period, including a complete business cycle, should exactly balance the required dividend for the period, but the inability to forecast accurately the element of uncertainty and risk will warrant the management in playing safe and building up an adequate surplus for the lean years. The actual amount of the allowance depends upon informed judgment.

The third objective for a larger allowance for retained earnings is to meet new capital requirements by internal financing rather than by issuing additional securities. It is contended that the additional return going to the common stockholders owing to the earnings on the increased assets will compensate the stockholder for his additional investment and the consumers will have the benefit of lower capital costs due to the savings

in flotation expenses and the saving in dividends because of a smaller number of shares of stock.

In fairness to the consumers the provisions for earnings in excess of dividend requirements must be estimated carefully. If the estimate is too generous there is danger that a higher rate of return will be demanded on the rate base enhanced by the surplus earnings. There is logic in this double counting concept depending upon the liberality of the dividend rate. Stockholders who are receiving a cash return of around 6% on their utility investment can hardly be classed as a group who is sacrificing dividends today in order to build up savings for tomorrow. Furthermore, surplus accumulation or "ploughed-back profits" are a source of capital secured by a company without cost of financing. Since it is believed investors are buying stocks on the basis of dividends, is it not more economical to maintain a policy of higher payout ratios and raise capital through the issuance of new stock at higher prices rather than through reinvestment of earnings? A high payout ratio of dividends is currently believed to minimize the over-all cost of capital.

From that viewpoint then the retention of earnings would seem to be needed only to the extent deemed proper for "rainy" days and to stabilize dividends. A review of the security markets from 1947 to date certainly indicates the ability of the public utility industry to attract capital amounting to approximately 50% of the total annual volume of corporate financing. Hence the market has, with a high degree of consistency, tended to place higher values on public utility earnings paid out regularly in dividends than on earnings retained for credit to surplus account. However, there is a segment of the market which is not inclined toward the heavy discounts on retained earnings

—a group that is anticipating a gradual increase in the value of their stock holdings. To attract investors of this character (who invest for capital gains) might in the long run require a larger retention of earnings than that necessary to tide over the poor years and to stabilize dividends.

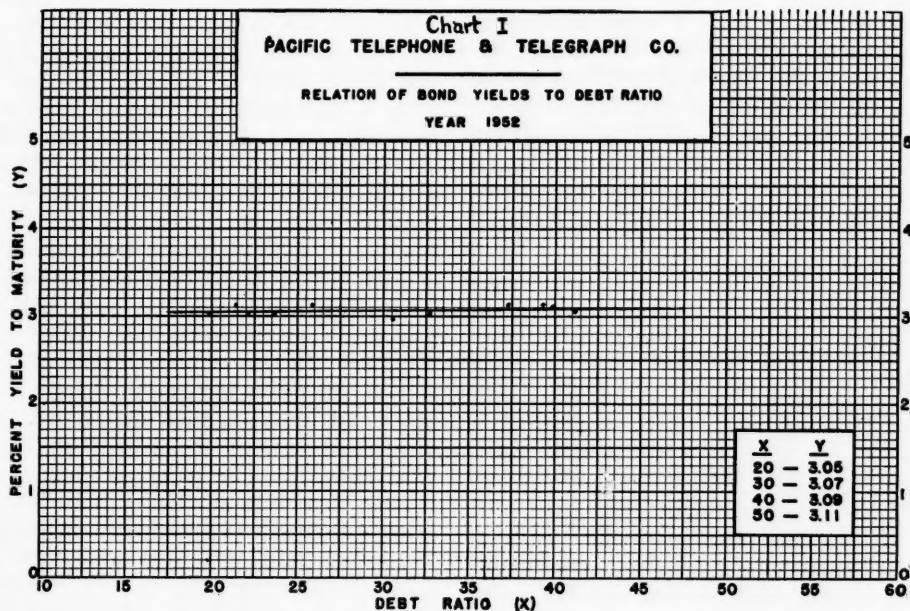
Problem of the Actual or Assumed Capital Structure

In the application of the cost of capital formula, a primary problem concerns the choice of an appropriate capital structure. The assumed or actual capital structure determines the relative weight to be given to debt, preferred stock, and common stock components of total cost of capital. Since equity capital is more expensive than debt capital, a large amount of equity capital will, within certain limits, increase the over-all cost of capital for the company.

The capital structure not only affects the total cost of each component of capital, but also the rate required for each component. As already stated, the cost per dollar of equity capital tends to increase with an increase in the percentage of debt in the capital structure. It has been claimed that as the debt ratio is increased both the rate of interest on the funded debt and the capital-attracting rate of return on the equity capital will increase so as to preclude any net reduction in the overall cost of capital. It is true that beyond some rather indeterminate point, changing from time to time and from company to company, an increase in debt ratio will increase the rate of interest at which new bonds can be marketed and will raise the capital-attracting rate-of-earnings on common stock. Most statistical studies coming to the writer's attention indicate that within a limit beyond any debt ratio generally contemplated in a rate case, the cost reducing effect of an increase in the debt ratio more than offsets any cost increas-

ing effect of a higher interest rate and a higher earnings-price ratio. For the Bell System, statistical studies seem to indicate the cost of debt capital will not increase materially until the ratio exceeds fifty percent.

Figure I shows for eleven Bell System Companies whose bonds are actively traded that the yield rises only slightly, .06 percentage points, when the percentage of debt increases from 20 percent to 50 percent.



Source: Schedule 7, Exhibit No. 103, by Witness James K. MacIntosh before the Public Service Commission of California in the Pacific Telephone and Telegraph Company Case. Application No. 33935, February 1954.

In order to show the relationship between dividends-price and earnings-price ratios and the percentage of common stock equity in the capital structure, a study was made of 115 operating electric utility common stocks. These utilities were divided into three groups according to the percentage of their capital structure represented by common stock and surplus. The dividends-price and the earnings-price ratios were computed for each of these groups. It will be seen from the table that there was a declining cost of capital measured by either standard as

the percentage of common stock equity increases.

TABLE III—DIVIDENDS-PRICE AND EARNINGS-PRICE RATIOS AS AFFECTED BY THE PERCENTAGE OF CAPITAL STRUCTURE REPRESENTED BY COMMON STOCK AND SURPLUS*

Percentage Common Stock and Surplus	Number of Companies	Average Common Stock and Surplus	Average D/P Ratio	Average E/P Ratio
Up to 30%	51	26.7	6.57	9.52
30-40%	40	34.5	6.33	9.28
Over 40%	24	48.3	5.99	8.10

* Source: Bear, Stearns & Company, May 1951, based on prices as of the end of April 1951.

Another obvious conclusion can readily be drawn from this table, namely, that generally speaking the higher the per-

centage of common stock equity, the greater the percentage available for the payment of dividends.

In the August 1953 issue of *The Analysts Journal* is an article entitled "The Standard Dividend Concept for Electric Utility Companies." Mr. Leason presents a table using a sliding scale of suggested dividend payments from recent earnings. He refers to the suggested dividend payout as the "standard dividend" to differentiate it from the actual dividend payout:

Common stock equity	Standard dividend payment	Common stock equity	Standard dividend payment	Common stock equity	Standard dividend payment
20%	50%	34%	71%	48%	88%
21	51 $\frac{1}{2}$	35	72 $\frac{1}{2}$	49	89
22	53	36	74	50	90
23	54 $\frac{1}{2}$	37	75 $\frac{1}{2}$	51	91
24	56	38	77	52	92
25	57 $\frac{1}{2}$	39	78 $\frac{1}{2}$	53	93
26	59	40	80	54	94
27	60 $\frac{1}{2}$	41	81	55	95
28	62	42	82	56	96
29	63 $\frac{1}{2}$	43	83	57	97
30	65	44	84	58	98
31	66 $\frac{1}{2}$	45	85	59	99
32	68	46	86	60 &	100
33	69 $\frac{1}{2}$	47	87	over	

While analysts might take issue with Mr. Leason's table, particularly with the 100% payout when common stock equity is 60% or over, no one could seriously question the principle that dividend payout may be substantially increased as the common stock equity becomes a greater proportion of total capital.

Many analysts and public utility commissioners contend that the determination of a proper capital structure is a function of management and hence that they are precluded from the adoption of a hypothetical or ideal capital structure. Certainly management has the right to determine its own capital ratio, subject to such regulation thereof as may be exercised by regulatory authority. But where the existing capital structure is clearly unsound or "extravagantly conservative" so as to impose excessive capital costs on the consumers of the service, then an analyst or a commission has to substi-

tute an estimate as to what the capital cost would be under non-existing conditions for what it actually is or will be in view of prevailing and future conditions.

Furthermore, the impact of high rates of federal income taxes may require some change in viewpoint as to what constitutes a reasonable debt ratio. Let us compute the percent of earnings requirement which is necessary to cover both a 6% return and income taxes at two different levels and a debt ratio of say 50% with a 3% interest rate. With federal income taxes of 38%, \$8.76 is required to cover taxes and the 6% return. If federal income taxes are increased to 52%, then \$10.88 are required. Thus with federal income taxes being passed on to the consumer, which is necessary if a reasonable return is to be earned, the heavy increase in charges for taxes and return is such that it would seem more desirable to increase the debt ratio above the one more acceptable if income taxes were at a lower rate. Back in the 1920's and 1930's income tax rates were about 13 to 15%; and in the 1940's they ranged from 38% to 40%, while currently the rate is 52%. Inasmuch as interest on debt is deductible in computing federal income tax liability, if a company is earning a relatively constant rate of return on total capital after income tax, it follows that as income tax rates increase it becomes easier to carry higher debt ratios.

In view of the objection to the use of a percentage debt ratio against which there is applied an estimated average rate of earnings on common stock equity, another plausible method would base the estimated over-all rate of return not on the average debt ratio of the period under review but rather on the average absorption ratio. The absorption ratio is the percentage of income available for fixed charges that is absorbed by the fixed

charges. It is similar to the factor "times interest earned." An average absorption rate of 25% would mean that fixed charges have been earned four times.

For purposes of determining a reasonable capital structure when the company's actual structure is not used, a common practice among analysts is to compare one utility industry with another. The most common comparison is the electric utility industry and the Bell Telephone System. In fact, Bell System witnesses strive for a lower debt ratio than would be acceptable for a large utility doing a predominantly electric business on the grounds of greater volatility or sensitivity to changes in the business cycle. Space will not permit full discussion of this controversy. Yet recent studies² on this subject indicate that too much emphasis has been given to the relatively higher degree of volatility of telephone companies compared with electric companies. The evidence does not justify the Bell System in striving for a one-third debt ratio as being equivalent to an approximate 47% for the electric industry, based on relative volatility of the two industries. The higher operating ratios of the telephone business, even when income taxes are excluded, combined with higher payroll ratio are claimed to create a vulnerability to sudden adverse changes in demand for service, or in operation costs, which are considered to be greater than that faced by an otherwise comparable electric utility.

These studies, based on variations in the rate of return for the Bell System as compared with fifty large electric Companies for the period 1930 to 1952, do not show any significant difference in vulnerability or volatility.

Cost of Financing and Underpricing

Costs of flotation or financing of stock are not too difficult to determine from the

actual or estimated corporate costs of the company under review. Such costs—in the form of underwriters' discounts and commissions as well as company expenses—will normally be incurred in the issuance of new stock. There is, however, an additional factor of importance to consider as a cost element, namely, underpricing or pressure. Pressure is the possibility that a large offering of new stock might depress the market below the normal price indicated by the day-by-day transactions in the market.

When a company makes a pre-emptive offering of new stock, it offers this stock not to the general public in an arm's-length transaction, but to its own shareholders as a sort of family arrangement. The offering price is usually set below the market price that has prevailed previously on the old stock and even below the price that is expected to prevail when the new stock goes "ex-rights." Hence there is created a valuable privilege of which the old stockholder can take advantage either by subscribing for the new stock at less than its worth or else by selling his subscription rights for exercise by someone else.

The problem then is to determine whether the offering price of the new stock through preemptive rights develops market pressure in respect to the price of the outstanding stock of the company which is offering additional stock. The procedure in measuring the amount of pressure is rather technical. First the market price is taken for the stock of the company issuing rights two days or more before the first announcement. The Dow-Jones Utility averages of prices would likewise have to be taken and for the same day. The average price of the stock plus the rights during the period the rights were being traded would then be computed, and the Dow-Jones average would also be computed for

the day. There would then be developed the percent change in the price of the stock, plus rights, at the average price contrasted with the price of the stock two days before the announcement of rights. The percentage change would then be adjusted, eliminating any general market movement indicated by the Dow-Jones utility average, and the figure obtained after adjustment would presumably represent the amount of pressure or depression which was occasioned as the result of the offering of rights.

To state this in more simple terms—it means that before the announcement was made, stock was selling at a price X. Now the question is—did the stock go up or down in price after the announcement that more stock was going to be offered. In order to determine this, one has to assume that if the stock went down in price, and the whole market price went down, as reflected by Dow-Jones average, then the stock did not go down because of pressure. Therefore the adjustment would indicate whether the stock price went up or down in greater amount than did the general market price.

The main point of controversy in this procedure is the use of the average decline in prices of stocks and rights from the starting price two days or more before announcement of the issue. Several witnesses contend for the lowest price decline rather than the average decline.

The result of a detailed study of electric utilities which the writer presented in a case in 1952 disclosed that there was a tendency for pressure to develop and that on the average for these companies the stock tended to depress the market about $3\frac{1}{2}$ percent. The average percent of flotation cost to total proceeds was roughly 2.35%. The combined effect of pressure and cost of financing amounted to approximately 6%.

The propriety of including an allowance for "pressure" in the cost of capital has been questioned, particularly in light of the ambiguity which surrounds it and in light of the fantastic claims sometimes made to its amount. From one point of view the risks inherent in the short-term fluctuation of the value of common stock investments can be regarded as nothing more than one of the risks normally assumed by investors. It is certainly known that common stocks fluctuate in value, and it is obviously true that a thriving, prosperous company needs new capital. It is also assumed that there is injury to the common stockholder. When a company has paid substantial dividends, and has in addition accumulated a large surplus upon which investors are permitted to earn a reasonable return, it is very questionable, according to a few critics, whether there has been any real injury to the investors that should be recognized in computing the cost of capital or rate of return. Finally, it has been contended that a substantial amount of pressure, if it actually exists, has been recognized in the use of earnings-price and dividends-price ratios without any adjustment. Market prices would have been depressed because of the additional sale of stock, but the decline in the market value of the stocks would have been accounted for in these ratios.

Impact of Inflation

Nearly all utility witnesses appearing before federal or state commissions in the last few years devote a large part of their testimony and exhibits to obtaining additional compensation for inflation. In addition to the hundreds of pages of testimony stressing the need for an inflationary adjustment numerous articles have also appeared in newspapers, magazines and journals. The literature on the subject has become voluminous and vociferous, yet the issues remain about the

same. Occasionally, we get a fresh point of view about this now somewhat hackneyed controversy.

Two basic methods, with variations in each, have been employed to compensate for inflation. One method is to convert the original capital investment by a price index into dollars of the current year. The difference between the two would represent inflation. Usually the adjustment is applied to the equity capital portion rather than the entire invested capital. In most cases the adjustment covers the period from 1940 to the date of the hearing. In one case in 1950, however, the adjustment was carried back to the 1850's, antedating the period of commission regulation.¹¹ The second and more common method is to adjust the rate of return for price changes by leaving the property accounts in terms of original costs.

Space will not permit analysis of all the issues dealing with inflation, hence the discussion will be confined to the major issues presented in rate cases in which the writer has participated. The problem of depreciation, extremely important and controversial during periods of inflation, will receive only passing reference.

A general appraisal of the testimony in these cases is somewhat difficult largely because of the chameleon-like position of a few of the witnesses. In the earlier cases, company witnesses stressed the need of an adjustment for inflation in order to attract capital. As the months and even a few years passed, with utilities and particularly electric and telephone companies raising huge amounts of debt and common equity capital at amazingly low yields or low costs, witnesses would in later cases emphasize the prediction that we are heading for a progressively

greater inflation for years to come. As the recession hit us with its-increasing unemployment and the declining production and sales, these dips were characterized by witnesses as minor business cycle adjustments and of no particular concern to regulatory commissions. Finally, company witnesses with more economic and academic training, are stressing the need of an adjustment in order to maintain the economic integrity of investors' capital. This is applying the concept of "fairness" to old stockholders. Unless regulatory commissions allow an adjustment in return to the current purchasing power of the dollar, there is, according to witnesses, an unfair expropriation of the real value of the property and investment of old stockholders.

While there is variation in emphasis in the discussion of inflation, the testimony is essentially to the same effect, namely, that the purchasing power of the dollar has declined from 50% to 53% and that inflation is a one-way street. The arguments could be paraphrased accordingly. Because the purchasing power of the dollar has declined about 50%, the "real" capital of an investor is impaired, presumably, by the same amount, unless it is compensated for in some form by an upward adjustment. With respect to the return on the investment, it must, in theory at least, be increased in the same proportion that the purchasing power of the dollar has declined. Thus, the \$9 dividend which an American Telephone and Telegraph Company investor has received for, let us say, twenty years, would now have to be increased to \$18 to receive the full purchasing power he had on his original investment. This result would be accomplished by revaluing his investment to give the same return he originally received. If in 1934 the stock originally cost \$114 with \$9

¹¹ J. Rhodes Foster, *The Washington Water Power Case No. U8398*, witness before The Washington Public Service Commission 1951.

dividend, or roughly an 8% return, it would now become \$228, which at 8% yields \$18.

This adjusted return in terms of current dollars is still short of protecting the integrity of the stockholder's investment, because these dollars are invested in property and plant. This plant is being used up and at a later date must be replaced. If it is replaced in kind, it will now cost double the investment. Therefore, depreciation cannot be computed on cost, the standard practice in utility regulation, but rather on the adjusted value to cover the full cost of plant consumed because of inflation. Hence, with the return adjusted to an index of purchasing power and depreciation in the same manner, the investor will be at all times in precisely the same relative position in terms of purchasing power as he was at the time of his original investment in 1934.

The impression is also given in these cases that the utility applying for a rate increase is relatively in serious financial difficulty and that unless relief is granted by this additional adjustment there will be a "flight of capital" to other industries which offer the greatest hedge against inflation.

No one will question the fact that the purchasing power of the dollar has declined to about 50% and that the \$9 dividend of A. T. & T. Company and the dividend of any company will not buy as much as previously. By the same token if the stock of any company is sold the amount received will not have the same purchasing power as in earlier years.

This condition is not something new. Inflation is a problem we have faced since we evolved from a barter to an exchange economy. Whenever an investment is made in a so-called "fixed income" or "limited income" type of investment, the purchaser takes the risk of a

decline in the value of the dollar. This is true of practically all fixed interest and dividend investments and of all common stocks of regulated utilities which are in whole or in part a "fixed income" type as a result of monopoly privilege and of regulation.

Most company witnesses proposing inflationary adjustments are in virtual agreement that the present inflation is here to stay. The following statements from actual cases will indicate unanimity that inflation is a one-way street: "Inflation in some degree has been the habitual economic condition of the nation since its infancy and probably of other nations since the invention of money. The problem exists in its aggravated form at the present time and every indication points to its continuance into the indefinite future."¹²

Another witness, in differentiating between the present inflation and past inflation, claims: "This inflation is essentially non-deflatable, in that it has been permanently cemented into our economic and social economy." "The price increases resulting from monetary inflation which has dwarfed in magnitude past cyclical fluctuations is a one-way street."¹³ All indications are, according to this theory, that for the foreseeable future inflation will continue with spiraling of wages and prices, and thus the accompanying decline in the purchasing power of the dollar.

According to testimony presented in the Michigan Bell Telephone Company case we have little fear of a major recession or a depression in the future because of (1) the basic changes in our economic structure such as the size and assumed permanence of the federal debt, (2) the

¹² Arthur B. Cannon, witness, *Washington Public Service Commission vs. The Pacific Telephone & Telegraph Company* Case No. U8600, 1953.

¹³ Mr. Jackson Martindell, witness, *Utah Public Service Commission vs. Mountain States Telephone & Telegraph Company* Case No. 3833, Jan. 1953.

strong and positive action of the federal government to combat recessions and (3) the improbability of general reductions in wage rates.¹⁴

For an economist to predict into the unforeseeable future the trend of price movements is professionally dangerous. Such a prediction would involve in part predicting the course of our international relations.

Even if we were to concede to this long-run theory, it has questionable bearing on the present problem facing regulatory commissions. They are not fixing rates at these hearings for the long run—but rather from one to two years in the future, judging by the frequency of applications for rate increases. Therefore, it is essential to analyze the cyclical movements of prices.

At the present time there are powerful economic and political forces working against inflation as well as in favor of it. Banks and insurance companies and investor organizations are pushing for curbs against inflation. Pensioners and the aged are vociferous against rising prices. Leading business men recognize that inflation in the long run may be destructive of the free enterprise system.

Professional forecasters are now widely agreed that general business is going through a downward readjustment. The "confidence boom" of previous years appears to have ended. Forecasters now seem to be divided on whether business will take a mild drop and then recover or a sharp and continuous drop in the following six months or a year. At least it should now be admitted there is a set of opposing economic forces working which will tend to drive prices and wages down rather than up. One of the important factors then is the therapeutic effect of government controls on business activity

and whether such controls can offset the forces tending to create a recession. Even though the controls may stop a recession from the depths of the last depression, the accepted theory that the chart of inflationary progress is a series of peaks and valleys and that each peak will be equal to or higher than the last can certainly be challenged. While the depression of the 1932-33 type is not considered probable, there should be no disposition to dismiss what is happening in unemployment, price declines, etc., as the simple adjustment to "normal" price and employment levels that were prevailing the last year or two.

The fact that the economy is operating at a higher plateau of prices than those prevailing in 1935-39, at depression levels, is no clear justification for adjusting utility rates to the higher plateau, particularly when it appears that prices are stabilizing or beginning to decline. During the great depression of the '30's no company witness urged a downward adjustment in utility rates as a deflationary action.

Another factor that should be considered is the fact that in modern industrial societies, improvements in technology, management, and labor productivity tend strongly toward falling unit costs and hence lower prices when wartime disruptions do not offset them.

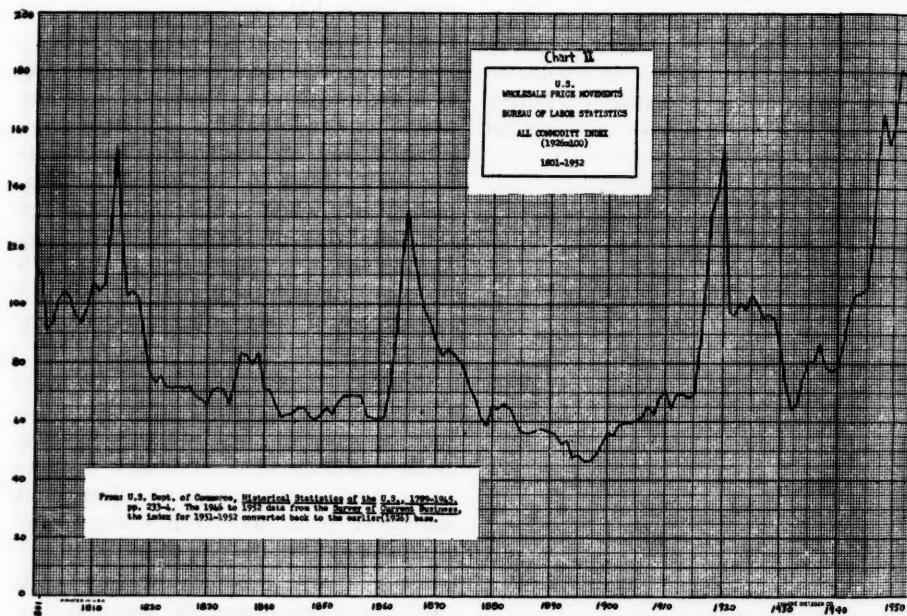
If inflation is a one-way street, then it becomes a condition of national importance and a serious problem. The solution of the problem should not be imposed on the various state commissions to create additional classes of people, the common stockholders, to free from the impact of a nation-wide inflation. Why should investors in stocks of regulated utilities be given different treatment, better or worse, than those who have invested in life insurance, in government bonds, savings accounts, pension funds or

¹⁴ Dr. J. K. Langum, witness, *Michigan Public Service Commission vs. Michigan Bell Telephone Company*, June 1953.

corporate bonds generally? Many commissions have recognized this phase of the problem and have even questioned the right within their legislative mandate to make adjustments for inflation. As stated by the Utah Public Service Commission in the Mountain States Telephone and Telegraph Company Case No. 3939, in 1953: "Nor do we believe it was the intention of the legislature in writing the public utilities act to empower or require this Commission to take action that would make utility stock-

holders free from the impact of the economic forces at work in this country."

In exhibits of company witnesses have appeared elaborate charts supported by tables designed to show the upward secular trend in prices since about 1895. Some of the charts begin with the year 1940. From these charts are drawn the conclusion that inflation is a series of peaks and valleys, and with a constant upward spiral of prices. In order to present the history of prices in the United States, we have prepared Chart II,



entitled: "United States Wholesale Price Movements, Bureau of Labor Statistics, All Commodity Index, 1801 to 1952." It is an index with 1926 prices taken at 100. The use of the wholesale price index is not intended to reflect the best measure of changes in purchasing power. It was the best available index for the entire period from 1801 to 1952. The use of the consumers' price index would

not materially change the trend of prices over the period. The chart shows first that the great rises in prices have been uniformly associated with wars. That is true of the peak in 1814 following the war of 1812, the peak of 1865 following the Civil War, the third peak in 1920 following World War I, and the peak in 1951, which followed World War II, accentuated by the Korean crisis.

A notable feature of the chart is the long-time downward trend of commodity prices between the wartime periods. For example, between 1814 and 1861, while there were minor ups and downs, the long-run trend is definitely downward. Similarly, between 1865 and to the eve of World War I, general prices again declined and remained at a low level. After World War I prices again started the downward trail with a sharp chasm in the depression of 1929 and the early 1930's. Not until the outbreak of the European War in 1939 was there a notable increase in prices. It should also be observed that, after 1948, prices again started downward, but were reversed by the Korean crisis of 1950-1951. Will it take another military crisis to stop the present decline?

Analyses of the data supporting the chart clearly indicate that, on a conservative estimate, years of downward drift of prices exceed years of rising prices by two to one. Furthermore, there are fundamental economic forces that account for these downward trends in the price structure between wartime periods.

Another observation of this chart would indicate a downward trend in prices from 1801 to 1895 and, as previously stated, an upward trend from 1895 to 1952. One might also draw a free-hand downward trend from 1920 to 1933 and an upward trend from 1933 to 1953. The important feature of this chart lies in the fact that an economist cannot ignore historical facts, that after every war there has been a sharp and in most instances a devastating depression. It took about eleven years before the real break came after World War I—we are but nine years from World War II. After studying this chart one wonders why analysts start adjusting for inflation in 1940. Why not start with 1932 and adjust for a complete cycle so that the

high purchasing power of the dollar during the depression offsets the inflation of the postwar years or, to state it differently, when dividends were worth 200 percent rather than 50 percent.

It should also be pointed out with respect to the chart that public utility properties are not acquired at any one price period but at various levels. Consequently, the amounts appearing in the plant accounts of public utilities will normally represent properties acquired in times of high prices and in times of low prices. Moreover, the greatest expansion experienced by the telephone and electric industries, and probably most utility industries, occurred during the last eight years. The expansion was at relatively high prices measured by most periods in the history of the utility industry. With substantial amounts of plant investment made at or near the peak of prices, it would not take much of a decline in prices in the future to make replacement cost not much different, or even less, than book cost. With respect to Pacific Telephone and Telegraph Company, it is pertinent to know that average net telephone plant had increased from \$355,128,000 in 1940 to \$1,159,215,000 in 1952, an increase of 226%.

Attraction of Capital

It has been contended that unless the impact of inflation on utility investments is given proper recognition by regulatory bodies in fixing rates, utilities will not be able to attract capital on reasonable and equitable terms in comparison with non-utilities.¹⁵

Statistical evidence seems to belie this contention for the facts disclose that

¹⁵ Witness, Jackson Martendell, testified as follows in *Utah Public Service Commission vs. Mountain States Tel. & Tel. Co.*, p. 23: "In my judgment, the effect of inflation on utility investments must be given proper recognition by regulatory bodies in fixing rates if utilities are to be able to attract capital on fair and equitable terms in competition with non-utility industry."

there is sufficient confidence in the stocks of most public utilities as evidenced by the amounts of capital that have been raised during the inflationary period. Since 1945, American Telephone & Telegraph Company has raised approximately 3 billions of dollars of common stock capital. Stockholders have increased from 683,897 on December 31, 1945 to 1,220,509 on December 31, 1952. Surely these 500,000 new stockholders

who furnished the additional equity capital were aware that price levels had increased and that inflation had occurred. Further, it should be emphasized that the other costs of rendering utility service such as labor, materials and supplies, depreciation and taxes are included in operating expenses.

Other utilities have been able to attract capital during the postwar period as reflected in Table IV. This table

TABLE IV—NEW CORPORATE ISSUES IN THE UNITED STATES: NEW CAPITAL (000's)

Item	1946	1947	1948	1949	1950	1951	1952*
<i>Stocks:</i>							
Total ¹	\$1,480,347	\$1,233,089	\$ 912,286	\$ 973,643	\$1,232,397	\$1,651,654	\$1,578,901
Public Utilities.....	142,884	283,637	378,979	706,794	725,098	774,504	766,036
% Public utilities to total....	9.65	23.00	41.54	72.59	58.84	46.89	48.52
<i>Bonds and Other Debt:</i>							
Total ¹	\$2,084,093	\$3,597,956	\$5,351,738	\$4,186,986	\$3,338,142	\$4,478,657	\$5,088,420
Public Utilities.....	674,919	1,751,564	2,506,526	1,849,531	1,608,566	2,058,197	2,171,661
% Public utilities to total....	32.38	48.68	46.84	44.17	48.19	45.95	42.67
<i>Total Stocks, Bonds and Other Debt:</i>							
Total ¹	\$3,564,441	\$4,831,046	\$6,264,025	\$5,160,629	\$4,570,539	\$6,130,311	\$6,667,322
Public Utilities.....	817,804	2,035,202	2,885,505	2,556,326	2,333,665	2,832,701	2,937,698
% Public utilities to total....	22.94	42.13	46.06	49.54	51.06	46.20	44.06

¹ Includes railroads; public utilities; iron, steel, coal, copper, etc.; equipment manufacturers; motors and accessories; other industrial and manufacturing; oil, land, buildings, etc.; rubber; shipping; investment trusts, trading, holding, etc. and miscellaneous.

Source: *The Commercial and Financial Chronicle*, Volume 173, Number 4993 dated March 12, 1951.

Source: *The Commercial and Financial Chronicle*, Volume 176, Number 5165 dated November 3, 1952.

* For eleven months ending November 30, 1952.

reveals the new capital raised by corporate security issues in the United States in the years 1946 to 1952. It shows a breakdown in dollars and percentages of these issues for stocks, bonds and other debt, and the total. Referring to the lower total section, it will be seen that, in 1946, utilities raised only 22.94% of the total new capital; but each year until 1951 there has been an increase in the percentage. In 1952, utilities raised 44% of the total new capital.

It is also interesting to note the proportion of total stock capital raised by

public utilities over the period. In 1946 the percentage was 9.65%. It rose steadily to a peak of 72.59% in 1949, dropped in 1950 and 1951, but increased again in 1952, making up 49% of the total stock financing. If inflation has affected or will affect the position of utility stocks, the market has already reflected it and a proper cost of capital gives weight to inflation insofar as it had an effect on the market for common stock. The contention that utilities cannot attract capital without any special adjustment for inflation is belied by the facts.

In the Michigan Bell Telephone Case of February 1954, a witness contended that public utilities have raised such a large percentage of new capital issues simply because retained earnings have been so low in comparison with non-regulated businesses that they have been forced to secure their funds from the security markets. Obviously, many non-regulated companies do much of their financing through surplus or retained earnings. But such firms are not comparable with public utilities with their monopolistic characteristic, their heavy fixed investment, their high debt ratios, and low fixed-capital turnover. Many of these non-regulated companies are relatively small, with completely different operations, and many are closely-held corporations where it is the usual practice to plow back the earnings. Because of the small percentage of fixed capital to total capital and hence of rapid turnover of capital, these non-regulated firms can finance out of earnings. While the non-regulated business enterprises as a group may have provided better protection against the inflation, they are generally more vulnerable during depression periods as evidenced by the depression of the '30's.

Company witnesses have also developed an array of exhibits comparing stock prices, dividends and earnings of the public utilities with industrial companies with the view of seeking an increase during the inflationary period of 1940 to 1952. In these exhibits they show that during this inflationary period the company seeking a rate increase and, to a lesser extent, other utilities were unable to maintain there "real" income and values. Therefore, it is loudly claimed that utilities must have an upward adjustment in the rate of return so that common stockholders would be compensated for inflation and would receive

an income of more or less constant purchasing power. Here the question is posed of whether this near constant purchasing power can be achieved by the inflationary adjustment as suggested.¹⁶

Such a plan seems incapable of realization, at least in the short run. As Professor Clemens developed in the *May* issue of *this journal*, the reason for this is the fact that the formula consists of two variables, the cost of money and the inflationary adjustment based on prices. "The inflation adjustment standing alone would probably give the investor an income of constant purchasing power, but it would not necessarily do so if it were coupled with the cost of money computed from market yields. Investors would merely discount expected inflation or deflation and bid up, or bid down, the price of the stock accordingly. Consequently, under conditions of expected inflation, yields would be lower than otherwise, and under conditions of expected deflation, yields would be higher. Only if the market anticipated no change in the price level, in future income, or in future institutional arrangements would the equity investor's actual income be adjusted to purchasing power. This process of discounting would in effect constitute an exchange of present earnings for future earnings."

In the long run, witnesses who support this view are probably correct in arguing that the return would move upward with prices. However, it must be emphasized

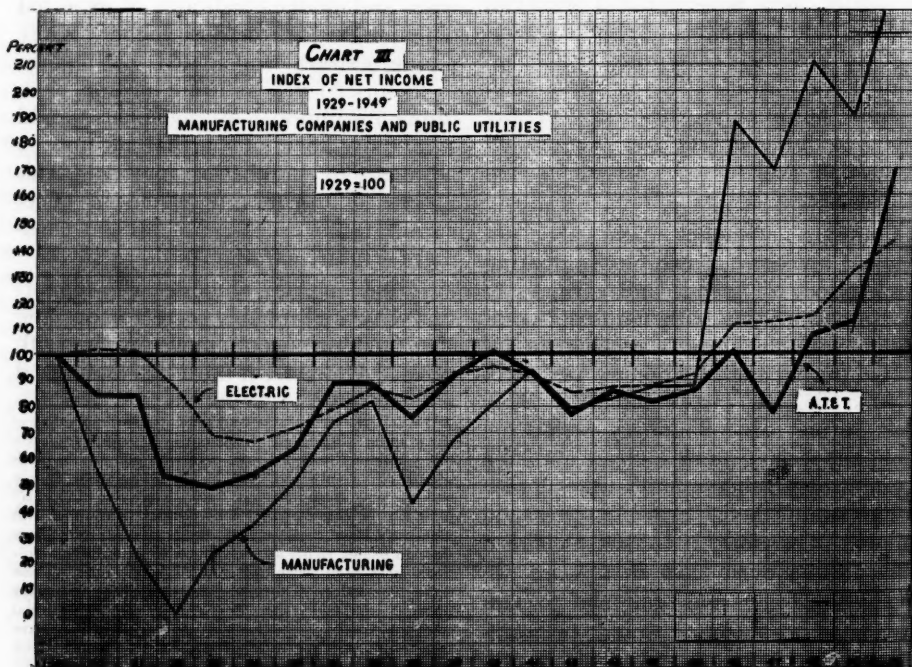
¹⁶ A full picture has not been presented in the method of determining whether an investment in a particular public utility common stock has kept pace with inflation by comparing the current market with its price at an earlier date or with the price of an industrial stock. The value of "rights" must also be considered. Public utilities, in contrast with industrials, have raised a high percentage of their funds through issuing rights to stockholders to subscribe to additional stock or to debentures convertible into stock. These rights have value. Thus, the mere comparison of market prices at two different dates or of a utility with an industrial company would ignore the value of the rights which have been issued and the earnings that have accumulated on these rights over the years.

that "a cyclical pattern would be imposed upon the income flow; income would be lower in times of expected inflation, higher in times of deflation."

Because of the changes in future expectations and other factors these cyclical variations seem more significant for utility regulation than secular trends. The market cost of common stock capital is certainly not constant, and in the short run is subject to even greater variations than the general price level. The effect of an inflationary adjustment would be to give the equity investor a real income that was sometimes less and sometimes more than his monetary return.

Another important factor for consideration is the effect of an inflationary adjustment on utility securities. Such an adjustment would likely change the basic characteristics of utility securities. Investors in public utilities, particularly in

the Bell System and electric utilities, are seeking stable incomes and security of investment, whereas investors in manufacturing companies are willing to take greater risk. The latter may be considered a more speculative type of investor, for they are seeking income not only through dividends but through the increased value of stock which comes during the prosperity periods of the business cycle. If appreciation in value of income is fairly well assured, existing income is likely to be capitalized at a very low rate, but if there is any great element of uncertainty about the expected appreciation, the opposite is likely to be true. To illustrate the significance of this statement, Chart III was prepared to show the rates of change in net income for the manufacturing companies and public utilities for the years 1929 through 1949. Net income has been



converted to an index with 1929 taken as 100. This chart shows clearly the relative stability of public utility net income as compared with the net income of the manufacturing industry. When general business activity slackens most manufacturing industries are swept along by the crowd. Telephone and electric industries give just a little. Manufacturing industries might be classed as "feast or famine" industries in that they starve for income during depressions but earn abundantly during prosperity.

From a peak of approximately \$206 million in 1929, net income of A. T. & T. Company fell, at its lowest point in the depression, to about \$100 million in 1933 and increased to about \$347 million in 1950. Since then, net income has increased to \$407 million in 1952. Electric utilities declined from a high of \$596 million in 1930 to \$391 million in 1934 and raised to \$832 million in 1950. On the other hand, the net income of manufacturing companies, at its low point, was wiped out almost entirely. From \$3.4 billion in 1929 the net income of the manufacturing companies plummeted to \$45 million in 1932.

As stated above, adjusting the rate of return or the rate base in accordance with changes in the price level would probably cause the stocks to fluctuate even greater than the general price level. Under such conditions the effect would be to give the equity investor a real income that was sometimes more and sometimes less than his monetary income.

Economic Integrity or "Fairness to Stockholders"

Apart from the foregoing questions involving the secular trend, the attraction of capital and the effect of an inflationary adjustment on the basic characteristic of

utility stock, there remains for discussion the fundamental allegations of fairness and equity to utility stockholders. The assumption that a utility needs protection against inflation, not only as a basis to attract capital but on the basis of fairness to stockholders, is an allegation that has never been affirmatively proved. In fact the evidence points to the contrary. For a witness to take a position on the issue of fairness raises several fundamental problems that transcends the particular question in controversy in a rate case. First, how can an economist in his professional capacity measure fairness? Is the criteria, so far as utilities are concerned, that the return be kept equal to an average of indices which measures purchasing power or that the return be made comparable with non-regulatory industries? What period of time should be used in determining inflation or deflation? Should not the analysis be made for a complete cycle, so as to include periods of prosperity and depression? To give the common stockholder an inflationary adjustment for the period of 1940 to date, completely ignores the higher rewards they received during the depression when the return greatly exceeded the purchasing power of money. If an inflationary adjustment is based primarily on "fairness and equity," why adjust only the common stock capital? While some writers weakly admit that the adjustment should apply to bond holders and preferred stockholders, no mention is made on the witness stand urging an adjustment in interest rates or dividends beyond the contractual rates which have been computed for these groups. The fact that bond holders contracted for the going rate does not maintain their financial integrity. Perhaps it is recognized that the purchasers of utility bonds, usually institutions, do not want a purchasing-power bond.

They are looking for secure dollar incomes.

Another basic question is whether, and on what grounds, an investor in a public utility industry, or in any non-regulated industry, has valid grounds to complain of "unfair" treatment when he bought the stock with his eyes open and with the general knowledge that he would assume certain risks. Perhaps the older investors who bought stock before the Hope Case in 1944 could allege unfairness today because the Court did not hold fast to the old-fashioned "fair value" rule of ratemaking—a rule which when applied would give them a partial inflationary hedge. He could hardly be classed as one deceived as to the terms of his investment or that he had been treated unfairly because the Court did not keep faith with his idea of evaluating property when he made his original investment.

Proponents of this theory would give inflation protection when they know that the new stock, despite the inflationary provisions, would be and has been readily purchased by individuals, who, for some reason or another, prefer this stock over stocks of some industrial or manufacturing corporation. Under such a theory, investors in utility stocks would receive protection against their own blunders and ignorance, even though they are perfectly willing to take their chances on the future of the dollar. On the other hand, a deflationary adjustment following a peak period of rapid expansion during high prices, might lead to financial embarrassment in operation under a reduced rate of return adjusted downward for the deflation.

In view of the foregoing discussion an upward adjustment in the recommended cost of equity capital for inflation is unnecessary.

(1) There are no grounds for predicting with any confidence that inflation will occur

in the one or two years ahead, or the immediate period for which the rates are to govern. The past behavior of prices and the increasing unemployment indicate falling prices are more likely than rising prices for the cyclical period under consideration in rate cases. In short, it would in our judgment be quite inappropriate for a commission to adjust the company's rates on the mere assumption that the long-run trend of prices is "inevitably upwards."

(2) A proper estimate of the cost of equity capital especially on a net-proceeds basis gives substantial consideration to the costs incurred in raising the millions of dollars of equity capital by utility companies—all raised during a period of rapidly rising prices.

(3) Utility company common stocks are in effect a fixed or limited income type of security and have long been so regarded. Any theory which would increase common stock earnings of these companies simply because of general price increase would attach many of the market characteristics found in industrial stocks. The great mass of utility company stockholders have bought the stock for secure investment purposes because of the market stability and regularity of dividends. It would seem questionable to adopt a financial policy which could change stockholder investment to many similar characteristics of industrial issues.

(4) Investors purchasing stocks in most utility companies have thereby discounted the inflation. Dividend yields and earnings-price ratios will reflect investors' evaluation of the market.

(5) Rights issued by utility companies from time to time do give investors additional value and in the long run may permit substantial appreciation.

(6) Proper estimate of cost of equity capital gives a substantial cushion of earnings which with accumulated earnings on the surplus increment gives stock added value over its book cost.

With respect to the loss of purchasing power, one cannot deny that stockholders who have held stock of public utilities for a long period, along with those who directly or indirectly receive income from the company's indebtedness, have suffered a loss of purchasing power of their incomes as a result of the infla-

tionary periods through which we have passed. Unfortunately, there is no way by which the commission could make good those losses with even reasonable regard to "justice" to different groups. The creditors have of course no chance of recouping. Adjustments that would reimburse the common stockholder who bought his stock before these inflationary periods would necessarily entail giving wholly undeserved gains to those many who purchased stock in more recent years. It includes all those who have taken up the very large amounts of common stock that have been issued in recent years, and those who in recent years have purchased stock in the open market. It must be remembered that these people have purchased their stock with already depreciated dollars, and a sharp rise in their dividend, designed to compensate for the inflationary losses of

long-time stockholders, would present these persons with wholly undeserved windfalls. Such adjustment, moreover, would shift part of the loss from inflation to the consumers, many of whom have not shared in the inflationary gains of the past year.

Finally, any such action on the part of a regulatory commission would seriously unsettle regulation. It would strengthen the very inflationary forces against which representatives of the companies warn us. Principles such as those proposed by witnesses urging an inflationary adjustment, like those urged by proponents of "fair value" or "reproduction cost," if consistently carried onward into the future, as they should be if they are recognized in rate cases, would in fact endanger the future stability of companies in times of falling prices and hopelessly confuse the regulatory process.

Land Reform in Bolivia†

By EDMUNDO FLORES*

ON the second of August, 1953, in the village of Ucureña, Department of Cochabamba, the Cabinet and the Constitutional President of the Republic signed the Decree that provides the legal and economic basis for the agrarian reform.

Why is it that the first agrarian reform of the Andean countries took place in Bolivia? What is the nature of this reform and what will be its foreseeable effects on the economy of the country? Will the emancipation of the Bolivian Indian and his more active participation in national life have continental or regional repercussions? These questions cannot be answered easily, yet it appears to be useful and timely to consider them in relation to the recent developments in Bolivia.

Among contemporary economists, it is widely accepted that agrarian reform is practically an unavoidable step in the evolution and development of an agricultural country. There are even schools of thought that, from a teleological plane, refer to it as a "historical imperative." Obviously, a discussion of the inevitability of agrarian reform in the abstract would be sterile, but the study of its causes and its effects requires the most careful attention.

In order to pursue a legitimate and purposeful course of inquiry, it is necessary

to frame the phenomena of agrarian reform in a time and a place; to look for its roots in the past; to appraise its present significance, and to project its predictable consequences into the future.

Historical and Economic Background

The outstanding facts that created a favorable environment for the enactment and application of the agrarian reform in Bolivia are: the changes brought about by the Chaco War (1932-1937); the political effects of the liberal and sometimes radical ideas taught in some of the universities of the country; and, finally, the exaggerated concentration of economic and political power in the hands of large land and mine owners.

The Inca Empire, the Conquest, the War of Independence and republican life with its monotonous coups d'état, its military juntas and its other classic manifestations are the common heritage of the three Andean countries, Bolivia, Ecuador and Perú. This heritage by itself lacked the necessary elements for the emergence of a progressive and dynamic land tenure pattern or, for its drastic alternative, agrarian reform by direct political action and by decree.

The first major difference between the evolution of Bolivia and that of the other Andean countries is the Chaco War. The war broke up the lethargy in which the country had vegetated and set in motion a chain of new developments. Faced with adversity and defeat, the "white man" and the Indian looked and behaved very much alike.

Though a fiasco the war effort galvanized the country into action and broke, or at least cracked, the prevailing rigid caste system. Afterwards, it was impossible to restore the structure that had

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* Food and Agriculture Organization of the United Nations.

prevailed in the past. The stony immobility of the Indian could not be maintained once he left the lands that had been his only horizon. He began to be attracted by the city, where he became a "cholo" and climbed several steps up the social ladder, or to the mines where he lost his ties with the community and ceased psychologically to be an Indian, becoming rather a second-class citizen.

The "white man" could not preserve his previously unquestioned supremacy. Gradually a slow process of social capillarity began to take place. The traditional misery and abandonment of the Indian assumed a new character; it became a symptom of "social unrest" and was no longer considered as his inevitable condition.

The liberal ideas which were studied and discussed in the universities acquired more convincing tones and provided the ideological foundations for new and active political parties. The doctrines of the great social movements of the past gave a universal context to the doubts and aspirations born during the war. New parties formed by students emerged on the political scene and exerted great pressure in favor of change.

An almost incredible concentration of power was in the hands of the three mining companies which for many years ruled Bolivia in a most inept and irresponsible fashion. To these, the landholding class played a comfortable second fiddle while enjoying the perquisites of a wealthy aristocracy.

The grim history of their use of power is recorded by unbiased sources:

"It suffices to refer to the reports of the Magruder Mission, the Bohan Mission, the Escudero Mission, the Bloomfield Mission, or the more recent Keenleyside Mission. In these reports there is mention of the deficient hygienic and industrial conditions maintained by the companies; the complete disregard of legal provisions concerning housing

for workers . . . ; the malnutrition of the miners by the enforcement of 'dangerously low' wages (according to the Magruder report); the employment of women and children in mining work, in conditions of complete lack of safety; the use of systems in the operation of the mines that were unadvisable both from a technical and from a health viewpoint. [According to the estimates of the Caja de Seguro at present, 30% of the miners have silicosis]; the systematic refusal of the companies to comply with labor court decisions and the use of armed violence to solve social conflicts."¹

The possibility of developing resources other than the minerals of the country was almost completely neglected during the rule of the companies.

"Patiño, Hochschild and Aramayo not only refused to invest their profits in the establishment of new industries, but even in their own activity, they limited themselves to the production of concentrated ore . . . they refused systematically to build smelters in Bolivia,² thus accentuating the dependence of our economy on the control of foreign smelters."³

The Political and Economic Reorganization of Bolivia

On the 9th of April 1952, the Movimiento Nacionalista Revolucionario came into power for the second time in the history of the country and gave continuity to the policies begun by the Villaroel régime (1943-1946). Their economic policy was practically written and defined by the very problems of the country. Its formulation could not be simpler nor its application more difficult. As a long term goal their aim was to improve the living conditions and to increase the level of income of the miners, the peasants and the almost non-existent

¹ "El Libro Blanco de la Independencia Económica de Bolivia," Subsecretaría de Prensa, Informaciones y Cultura. Departamento de Publicaciones. La Paz, Bolivia: 1952, pp. 70-71.

² Although tin smelting in Bolivia has posed serious technical problems which recently have been solved on a pilot plant scale.

³ *op. cit.*, p. 124.

middle class. The first step was to apply vigorous measures to destroy the economic power of the mining companies by the nationalization of the mines; the second, the agrarian reform. Both measures were undelayable imperatives, not only from their eventual value as economic reforms, but primarily as guarantees of political survival. A third step was to extend the vote to all the Indian population regardless of literacy.

Any party really concerned with the development of the country and its welfare had to begin that way. If the *Movimiento Nacionalista Revolucionario* had failed to do so, its political position would have been most ambiguous and subject to attacks, criticisms, and eventual overthrow from both the left and the right.

The expropriation of the mines took place the 31st of October of 1952, approximately six months after the government came into power. The nationalization of the mines had the support of most of the population. It was conceived not only as a necessary measure of political strategy, but also and preponderantly, as the vehicle that would give the government the necessary financial resources to pay for other social reforms, especially the agrarian reform.

In a speech made several months before nationalization, President Paz Estenssoro said:

"From the very first day, we maintained that the utilization of the natural resources should benefit Bolivians, through the nationalization of the mines. We also favoured agrarian reform, which would bring forth the incorporation of the majority of Bolivia's population, the peasants, the Indians, to national life We are aware of the domestic and international obstacles that we must face in order to achieve the nationalization of the mines Furthermore, there is an additional reason . . . to carry nationalization into effect . . . *In order to fulfill our program of government, in order to develop the economy of Bolivia and to give social assist-*

ance and public health assistance to all Bolivians, and to establish schools everywhere in our country . . . we need foreign exchange and all the necessary resources are going to come from the nationalized mines, from the mines that belong to Bolivia. (Italics by the author.)

"Besides nationalization . . . there is the other great problem: the agrarian reform, a problem that cannot be separated from the first one. This problem also concerns the miners inasmuch as the largest segment of the population lives outside national life. The Indians or peasants are Bolivians also, and the day that we shall bring them the agrarian reform, we will make this country bigger, happier, more powerful and full of opportunities not only for them, but for all Bolivians as well."⁴

Has nationalization produced the anticipated results?

First, it should be stated categorically that the political results are entirely positive. The bitter reaction of the mine owners, the leading wealthy families and the foreign interest affected, served only to further unite the people.

Whenever an under-developed country attempts to nationalize foreign or absentee-owned enterprises, the rumor spreads that the country which has taken that step will be unable to operate and manage successfully the expropriated concerns due to its backwardness, lack of experience and lack of know-how. This was the general opinion after the expropriation of the oil wells in Mexico in 1938 and in Bolivia just after nationalization. In both cases the forecast was wrong and *in Bolivia today, the total output of tin has not decreased* while the present level of production has been maintained without resorting to exhaustive methods. The techniques and exploitation system applied are the same as under the companies. The most important operating difference is that, without dispensing completely with the services of foreign engineers, many Bolivians hold technical jobs from which they were barred before.

⁴ *op. cit.*, pp. 89-90.

Wages in the mines have increased approximately 60 percent from the 31st of October 1952 to the end of 1953, but such increases immediately raised production costs and intensified inflationary pressures. Operating costs in the mines rose an average of 50% per ton of ore extracted.⁵ The cost of living from the date of nationalization to December 26th 1953, has increased approximately 200 percent, but the major share of this rise occurred after the 14th of May 1953, as an immediate consequence of the effort to stabilize.

While production did not go down as anticipated by the critics of nationalization, the decrease in world tin prices became a critical problem. Before nationalization on 31st October 1952, the price of a refined pound of tin was \$1.21-½ (U. S. currency), today (December 26, 1953) it is around \$0.80—a decline of 40 percent. The seriousness of this fact can be fully appreciated when it is realized that sales of tin account for approximately 70 percent of the foreign exchange income.

This drop in income derived from tin eliminated the possibility of financing other reforms with the proceeds of the mines since the available foreign exchange scarcely sufficed to import the necessary foodstuffs and to pay for a minimum of expenditures for maintenance and replacement of mining equipment and other types of capital equipment. Consequently, the project of financing agrarian reform at the expense of the mining industry had to be abandoned. But agrarian reform could not be left to the whim of world tin prices or postponed indefinitely.

To alleviate the exchange scarcity and pay for the agrarian reform it was thought

that necessary financial resources could be obtained through an advance from the International Monetary Fund or a loan from the World Bank for Reconstruction and Development. But it was first necessary to correct some of the serious defects of the monetary structure, such as multiple rates of exchange which previous administrations had bequeathed the Movimiento Nacionalista Revolucionario and which resulted in heavy subsidies on imported foodstuffs, practically paralyzing domestic agricultural production.

In a dramatic attempt to stabilize the boliviano, on May 14th 1953, multiple rates of exchange and the dollar black market were eliminated, and instead, a single rate of exchange (190 bolivianos to a dollar) was instituted while a free dollar market was allowed to function. Simultaneously, imports were severely restricted and the monthly wages of all the employed population were increased by 4,000.00 bolivianos.

Meanwhile, through the Foreign Operations Administration of the United States Government, a gift of 9 million dollars worth of surplus farm products was granted to Bolivia. The proceeds of the sale of these products will be devoted entirely to the development of the country. In addition, the dollar budget of the Point IV Mission has been increased by another two million dollars.

Non-Economic Aspects of the Agrarian Reform

While the nationalization of the mines enjoyed an almost unanimous support, agrarian reform did not fare as well. The issues in nationalization were crystal clear; expropriation was long overdue, it entailed direct losses to only three companies and national sovereignty was at stake. In contrast, the agrarian reform was a domestic issue which threatened the property of a small national group

⁵ However, by virtue of a depreciation of the Bolivian currency with price increases amounting to 300% since May 1953, the increase in cost has been nullified and on paper, it would appear as though costs actually decreased.

which in absolute figures amount to about 100,000 persons.⁶ But economic interest apart, there was what, at times, looked like a more powerful reason to oppose the reform—the caste system. Under this system, the Indian has been in the lowest stratum and played the dual role of mute serf and scapegoat. The thought that the Indian would enjoy a full share of legal rights and responsibilities awoke a bitterness which is difficult to describe. Ironically, though overwhelming economic dependence on Indian labor was never considered dangerous, reliance on the Indians to produce without coercion was regarded as an ominous undertaking.

When the determination of the Bolivian government to carry on the reform became clear and the agrarian reform commission started its work there were several attempts at sedition. They were directed by the Falange party, a conservative and unseasoned group which lacked a political platform and an economic program. Under ordinary circumstances the Falange might have been successful since they had the necessary financial means but, unfortunately for them, the center of gravity of Bolivian politics had shifted as a consequence of the elections of May 1951 when the Movimiento Nacionalista Revolucionario was elected.

According to a well-rooted tradition, politics in Bolivia have long been played like a large-scale chess game. Occupation of the Capital and the Palace—either by a salon intrigue or by armed revolt—was “checkmate!” After the contest was over, the winner was expected to maintain the status quo—plunder of the treasury was optional.

But with the advent of the Movimiento Nacionalista Revolucionario, politics changed to a less chivalrous contest by the overt participation and support of

groups that previously were excluded. Under the new situation, military occupation of the capital and the palace lacks significance. Far from being a checkmate which would open the way for restoration of the old status quo, it would more likely portend the annihilation of the military forces which dared to undertake such a venture. For if La Paz should fall, it would immediately be besieged by the miners and the Indians who would have the help of the “cholo” workers inside the city.⁷ Since the 9th of April 1952, the miners and the Indians have come to the capital rather often for parades, political demonstrations and in search of help with individual or group difficulties. Gradually they have learned their own political importance. To destroy now the recently acquired power of the miner and the Indian would require the successful pursuit of warfare in the whole country, not a coup d'état. If by a fortuitous chance the government should be overthrown by forces of the right, civil war would ensue.

One can hear often, among old politicians, young falangists and assorted members of the foreign colony who consider themselves “old timers” in Bolivia talk to the effect that the government will not last very long simply because by the law of averages they have exceeded their normal time in power. This talk fails to give proper weight to the significance of the participation of the masses in today's politics. Nonetheless, if the economic policy of the administration should exact undue hardship and privation from the already destitute low-income groups, and if it fails to show tangible results, it is conceivable that the extreme left parties could take power, only to pursue

⁶ Remo Di Natale E., *Revolución Agraria en Bolivia* (Cochabamba, Bolivia: Imprenta Universitaria, 1953), pp. 69.

⁷ The 9th of November 1953, while United States Senator Homer Capehart's mission was in Bolivia, a serious Falangista attempt to overthrow the government (the sixth since the government took power) was put down in a matter of hours by armed members of the pro-government unions.

the same economic goals in a more truculent way.

It is subject to question whether the leaders of the Movimiento Nacionalista Revolucionario actually intended to set in motion at once all the forces which have deprived them to a large extent of the initiative by allowing only a very reduced number of alternatives in policy. Their role has become more that of channelizers and interpreters of the public's will and less that of policy-maker. It is to their credit, however, that they have given evidence of shrewd political sense that has enabled them to keep several steps ahead of popular demands. Thus they have had the opportunity to apply, in relatively orderly and legal fashion (both nationalization of the tin mines and agrarian reform do provide for compensation), measures which had strong popular support and which, if repressed, would have led to malignant displays, to disruption and even to anarchy.

*General Economic Meaning of
the Agrarian Reform*

A program of social reform in a developed country may be achieved by resorting to measures such as new taxation systems, rationing, price control, nationalization of certain industries, subsidies to special activities, or similar measures which, in effect, imply a redistribution of income according to a given ideal of social justice. In the case of under-developed areas, agriculture is often the main, if not the sole, source of wealth, and ownership of land the basis for the prevailing pattern of income distribution. Hence the inevitability of introducing changes in the land tenure pattern when contemplating any program of economic reorganization. Land reform, however, is only the first step in an effective program of economic

development and the solution to an agrarian problem—even assuming the accomplishment of an ideal land tenure pattern—ultimately has to be sought in large part outside the field of agricultural economics. Two sets of factors are responsible for this. The first lies in the dynamics of agriculture; the second in the dependent role which agriculture has in modern economies.

The emergence of a problem concerning economic reform and development in a backward country implies both a markedly uneven distribution of income and defective resource utilization pattern. Under these circumstances population pressure tends to lower consumption to subsistence levels while extreme differences in wealth and the resulting insufficiency of demand prevents investment and retards introducing improvements in productive techniques.

Inequality of incomes sometimes promotes savings available for investment. But when differences in the distribution of income are as extreme as they were in Bolivia, when the economy is stagnant (as portrayed so well by Zimmermann in what he calls a "vegetable civilization");³ the extreme differences in income tend to perpetuate themselves, making richer those who own the land and pushing the rest of the population closer and closer to mere subsistence levels.

Under these circumstances, economic development can be started only through an initial redistribution of income which will both alter the structure and composition of demand and also increase its total. On the production side, a higher effective demand for food will stimulate a better and more intensive use of the two available factors: land and labor. This, in turn, may open markets for investment which were non-existent previously. Ac-

³ Eric Zimmermann, *World Resources and Industries* (New York: Harper's, 1951)

tivities other than agriculture must then be established in order to absorb a higher rate of population growth⁹ and to satisfy the increased need for capital and consumer goods. Only if alternative sources of employment are made available will it be possible to increase efficiency in agriculture, to produce food and raw materials for the non-agricultural population and for industrial needs, and to raise the standard of living and purchasing power of the farmer.

As agricultural productivity increases, the need for industrial requisites—transport, farm machinery, chemical products, etc.—grows, and the strategic factor for expansion shifts to scarcity of capital and lack of entrepreneurial and technical know-how.¹⁰ Thus, in essence and from the viewpoint of its economic effects, agrarian reform in an under-developed country implies first a transference of capital (land) followed by a transference of income.

In a latifundia economy a large share of net income usually finds its way into conspicuous consumption, or at best into such speculative ventures as usury, urban real estate, building of expensive apartment houses, etc. Absentee ownership results in a steady current of capital flight abroad which further handicaps the possibility of investment from savings. After agrarian reform it is expected that the rate of capital formation can be increased if the funds formerly spent on luxury living are turned to providing facilities to produce goods which are useful to the mass of the people.

Under latifundia conditions economic development can hardly be envisaged as a spontaneous self-generating process nor

as a problem of poor resources or defective production techniques since the prevailing pattern of resource use satisfies adequately the needs of those who own the land.

The wide differences in social status and income, of which land concentration is the strategic issue, are the main obstacles to economic development. In fact, *agrarian reform and economic development become identical concepts at this level and under these conditions*. The emphasis upon the land is explained because land is the most important determinant of income distribution and almost the only source of wealth. But, in effect, behind the redistribution of land lies the redistribution of income, the redistribution of opportunity, the first step toward the elimination of the caste system, and the creation and spread of the incentives which set in motion our industrial democratic age.

Within certain limitations this theoretical scheme can be applied to the agrarian reform just started in Bolivia. The initial redistribution of income will increase farm consumption and will also create more favorable institutional conditions to increase the general rate of capital formation. There is the possibility that, in the initial stages of the reform, urban and mining centers will experience difficulties in obtaining a sufficient supply of food; but this is a calculated risk for it would be unrealistic to attempt to change the economic structure of a country without expecting scarcity and privation at first.

The shift in the distribution of income will place a burden on the income groups which up until the present have been in the most advantageous position, while it will simultaneously improve the level of consumption of those groups at the bottom. This levelling of income naturally will require a policy of austerity and restraint from the middle-and upper-

⁹ The experience of Mexico indicates that after agrarian reform higher food consumption in rural areas resulted in decreased child mortality and raised considerably the rate of population growth.

¹⁰ See Edmundo Flores, "Agrarian Reform and Economic Development," *Proceedings of the Conference on World Land Tenure Problems* (Madison, Wisconsin: 1951), Part I.

income groups which could either be self imposed or enforced by the government. The fact that the groups which are called upon to reduce their real income are the most articulate and not necessarily the most socially minded, places an additional problem for the administration, since their protests will be by far louder than the sounds of approval of the benefitted sectors. This difference will be particularly important in the shaping of public opinion outside Bolivia.

The improvement in the level of real income of the poorest sectors, and particularly the peasants, depends on the realization of several conditions in the realm of production as well as on policy decisions. It goes without saying that if the agrarian reform is not followed immediately by a vigorous attempt to increase production and productivity, to open new resources to agriculture and to develop industry and services, its immediate favorable effects will be lost in a very few years.

Assuming that agricultural production will be expanded, there is still another crucial factor which will affect the level of real income of the farm population. The speed at which the resources of the country are developed will depend upon the success of the Bolivian government in securing investments from abroad and upon the domestic rate of capital formation. Clearly, the first possibility involves the approval and participation of third parties and lies outside the control of the administration. Should the government fail to obtain the necessary funds for expansion, they may attempt to increase the rate of capital formation by resorting to a policy of forced savings. In that case the determination of the share of income to be used up in consumption and the share that falls under savings will pose a very delicate problem which will

call for deep political insight. The margin of safety begins where there is a noticeable improvement over the traditional income level, which in this case is close to subsistence.

The Agrarian Reform Decree

The Agrarian Reform Commission was created by a Presidential Decree the 9th of April 1953, first anniversary of the Revolution. It was given 120 days to study the agrarian problem and to write a bill for its solution. Dr. Hernan Siles Zuazo, Vice-President of the Republic, directed the Commission which included some of the leading intellectuals and technicians of the country, representing different political tendencies and regions.¹¹

A brief synthesis and comment on the outstanding points of the preamble and the body of the decree is given below:¹²

In an enumeration of the forces which have dislocated the agrarian economy of the Incas from the time of the Spanish conquest and colonization and, by imposing a semi-feudal system, have given rise to the social and economic problems of the Indians and the land, the decree describes the results of the concentration of landed property. It also states that the findings of the 1950 census showed that 4.5 percent of the rural landowners of the country own 70 percent of the private landed property.

Referring to the Indians, the Decree states that the despoilment of which they were victims and the servitude to which they were subjected have led to a situation in which 80 percent of the adult population of Bolivia is illiterate, and in which technical education for rural producers is entirely lacking and that as a

¹¹ See: Arturo Urquidí, *Plan General para el Estudio de la Reforma Agraria* Imprenta Universitaria, Cochabamba, Bolivia, 1953, 32 pp.

¹² This synthesis follows the English translation of parts of the Decree published in *Industry and Labour*, ILO, Geneva, vol. X, No. 9, November 1953.

consequence of its backwardness and ignorance the indigenous population of Bolivia, housed "in wretched unhygienic dwellings, bereft of medical care, undernourished and wronged both spiritually and economically," is in an alarming situation which is reflected in the rates of mortality and of the incidence of disease.

The Decree establishes first the original right of the Nation over the soil, the subsoil and the waters of the territory of the Republic (Art. 1). The State recognizes and guarantees agrarian private property when it fulfills a useful function for society (Art. 2). The State recognizes only the following forms of agrarian private property: the peasant homesite, which serves the function of rural residence (Art 6); the small holding to be operated by the farmer and his family for subsistence purposes (Art 7); the medium-size holding operated with the help of hired labor or with agricultural machinery for the purpose of marketing most of the produce (Art. 8); the Indian communities, the agrarian cooperative holding and, finally, the agricultural enterprise (Arts. 9, 10 and 11).

It is anticipated that the agricultural enterprise will contribute in the short run to partially eliminate the food deficit of the country. The main characteristics of the enterprise, according to the Decree are: heavily capitalized agricultural undertakings which employ wage labor and apply modern techniques (Art .11).

The State does not recognize the legality of the latifundio which is defined as "the rural property of large size, which may vary according to its geographical location, that remains idle or is exploited deficiently by the extensive system (low capital inputs relative to other factors) with obsolete tools and practices and which serves to perpetuate the serfdom and submission of the peasant" (Art. 12). Therefore, "the

unit of land property defined as latifundio is affected in its entirety" (Art. 34).

It is relevant to emphasize the difference established between the agricultural enterprise and the latifundia since there is a widespread and erroneous tendency to consider as a latifundium a very large property, notwithstanding the social and economic consequences of its operation. If a very extensive farm is operated with large capital investments per unit of land, if it produces for the market, if labor is paid cash wages and enjoys the right to organize and to participate in collective bargaining, it cannot be concluded that such unit is a latifundio, regardless of its size. The acceptance and inclusion of this concept in the decree marks an advance over the agrarian legislation of other countries.

Maximum Allowable Size of Holdings

The decree fixes the maximum size of holdings, which varies according to whether they are on the plateau, on the Puna, in the valleys or in the sub-tropical region, the cultivable area alone being taken into account.

The size for different regions is based on the productive capacity of different types of land as determined by fertility and location and the necessary area to satisfy the needs of a rural family. For the small and medium property, these needs were comprised in a family budget which included: food, shelter, clothing, education, amusements maintenance of equipment, etc.

The Decree establishes the right of the Indian Communities to recover the lands which were usurped from them (Art. 42). As from the date of the promulgation of the decree, the communities which claim restitution rights may occupy the lands toward which they have claims but, provisionally, an area of land equal to a medium-

size holding will be kept for the owner (Art. 44). When and if a court decision acknowledges the rights of the community, the area that remained provisionally under the property of the landlord will be restored to the community without indemnification (Art. 45).

Eligibility of Peasants for Land Grants

All Bolivian citizens, 18 years of age or more, of both sexes, who intend to work on the land will receive grants wherever there will be available lands on condition that they cultivate it within a period of two years (Art. 77).

Peasants who have been subjected to a feudal regime of work and exploitation . . . are declared the owners of the land they are occupying or working until the National Service of Agrarian Reform shall grant them the lands to which they have rights in accordance with the definition of a small holding (Art. 78). Foreigners will enjoy the same rights, as long as they fulfill the regulations of migration and colonization (Art. 80). The right of preference of one individual to receive land grants in a given area rests upon permanent residence in said area and upon his being a farmer (Art. 81).

In the lands of a latifundium preference rights shall accrue to those workers with two years of residence or more computed from the 2nd of August 1953. At the time when the initial land grants are made, an area not smaller than 10 percent of the total individual allotments will be earmarked to be operated collectively by the community. An area equal or larger than that allotted to the peasants will be destined to the school fields (Art. 82.)

In reference to the size of the land grants, it is established that in those areas where there are enough lands the grants per family will be made allotting one unit to each family. This unit will

be equivalent to the size of the small holding. If lands do not suffice to grant a unit to each family, the size of the grant will be reduced in the necessary proportion to accommodate all those who legally shall have preferential rights over that land. The peasants insufficiently provided for will preserve their rights for new grants in other regions where there are available lands (Art. 83).

Aside from the already mentioned grants, any peasant from the Altiplano and the Valleys may receive 50 hectares in the Eastern frontier, provided he applies for these lands and fulfills the obligation of beginning to work them within two years (Art. 91).

Obviously there is inconsistency between the section of the decree which sets the area of a small holding for different regions (Art. 15) and the later admission that "if [latifundia] lands do not suffice to grant a unit to each family, the size of the grant will be reduced in the necessary proportion to accommodate all those who legally shall have preferential rights over that land" (Art. 83).

In Bolivia, the distribution of population is such that there is little doubt that insufficiency of lands will be the most frequent case. Why then take a course which will lead in the short run to widespread, small, uneconomic units?

This problem is one of the most controversial issues of agrarian reform, since in order to arrive at any workable formula it is necessary to conciliate two conflicting ends: to create units close to the optimum and the need to satisfy as much as possible the land hunger of the individual peasant. Any step toward an eventual solution has to be sought in dynamic terms keeping in mind that social valuation and motivation have a determinant influence upon the use and development of resources.

An attempt to grant in the Altiplano region agricultural units close to any hypothetical optimum would require a complete disregard for population pressure or else it would require as a simultaneous step the transfer of population surpluses to other regions or other productive activities. Since both measures are impossible immediately, the only alternatives are either to maintain the status quo or else to redistribute the land, either collectively or individually, according to some workable system of eligibility or priority. Land redistribution in the traditionally farmed and congested areas will achieve two ends: it will provide a stepping stone to incorporate the peasants into the political and social life of the country and it will pave the way for the technological improvement of agriculture in the Altiplano and the consequent increase in the standard of living of the peasants.

One of the distinctive features of the Bolivian program is the integral tie with the encouragement of settlement of eastern Bolivia. Before the reform, there were latifundia in the east which comprised more than a million hectares.¹³ It is expected that the land reform and the construction of communications (the Cochabamba-Santa Cruz highway will be completed at the end of 1953), will in effect open a frontier for the surplus population that now lives in the Altiplano.

Payment for Expropriated Lands

Expropriated lands will be paid, according to their current cadastral value, with bonds which will pay a non-capitalized interest of 2 percent per annum and will mature in 25 years (Art. 156). The collateral of the bonds is, in the first place, the one guaranteed by the peasants

through the mortgage of lands they received and through their crops, cattle and industrial processing equipment (industrial installation), and in second place, the guarantee of the State (Art. 157). The bonds will be accepted as payment for mortgage loans owed to the Banco Agrícola, as well as for payment of land taxes in arrears and, finally, for the purchase of public domain lands in settlement areas, within the regulations for the various types of holdings (Art. 158).

Payment for Land Grants

The benefitted peasants will have to pay the cadastral value of the granted lands in a maximum period of 25 years. If payment is finished in a shorter period, the peasants will enjoy discount premiums. The mortgage debts incurred by recipients of grants will be subject to 2 percent interest per annum on the value of the land received which will be paid to the Banco Agrícola.

Payment of the land will be made in 50 semi-annual installments. Failure to make two successive semi-annual payments will be penalized by a charge of 1% interest for the periods owed. Should payments lapse for a period of four installments, the land will revert to public domain. The State will be free then to grant this land to other peasants under terms considered most convenient by the State.

These conditions are very stringent and may endanger the success of the reform unless they are quickly modified. In the first place, 25 years is a very short period in which to pay for the land since agriculture in Bolivia is subject to frequent and serious hazards; frost, drought, pests, etc., and the low technological level of agriculture makes it difficult to reduce or control many of these risks.

But aside from this, the reversion of the land to public domain due to failure to

¹³ El Carmen, property of Suarez and Brothers, was 2,004,840 hectares and Alto Paraguay, property of Manuel Peña, 1,462,500 hectares.

pay four consecutive installments will place the peasants in an extremely difficult position. Two consecutive years of drought or frost will mean that a peasant—regardless of effort or initiative—will lose his lands. The farmer thus will be punished by the vagaries of the weather not only with a loss of income but with the loss of his land. This is the most serious defect of the decree and, if it is not rectified, it will either burden the State with unpaid-for lands, thus defeating its stated aims, or else the government will have to decree moratoria periods which will set a dangerous precedent since a moratorium is a two-edged weapon which can also be used by pressure groups to achieve political ends.

Organization Responsible for Implementation

To implement the agrarian reform, the government has set up the National Agrarian Reform Service, comprising the President of the Republic, the National Agrarian Reform Council, the Agrarian Judges, the Rural Agrarian Reform Boards and the rural inspectors. The duties of the National Agrarian Reform Council are to establish plans for all agrarian and rural affairs, to draft regulations under the legislative decree concerning agrarian reform, to hear suits concerning land claims, to grant land titles to new beneficiaries and to organize local boards, co-operative societies and farm credit as well as schemes for settlements, rational farming and farm mechanization.

The Strategy for Agricultural Development

In order to plan and to forecast the speed and scope of agricultural development, it is necessary first to estimate the available financial resources (in this case the primary limiting factor). Possible agricultural investment has to be divided into two types: foreign currency invest-

ment and domestic investment. Resorting to inflation, the Central Bank of Bolivia could finance projects for development based on the use of labor and nationally produced capital and consumer goods. Through this policy, it would be possible to use available national resources for expansion of agriculture at the expense of other sectors of the national economy. Naturally, this policy would be limited not only by economic and technical obstacles but by the political pressure of other groups affected. Its initial inflationary effects might be quickly neutralized if these investments increased production. In the case of dollar investments, however, limitations are set only by the dollar income of the country.

Regardless of how small the amount of available dollars for agricultural expansion may be, attention must be given to the fact that foreign investment capital (equipment, fertilizers, fungicides, etc.) will be indispensable only in those areas where there are no possibilities of substituting labor for capital goods. Bolivia has a large supply of both labor and land—its scarce factor is capital. In consequence, it would be folly to attempt to develop agriculture following the model of the United States, Denmark, or any of the highly developed countries of the world. Expansion will have to rely heavily on the fullest utilization of the two factors of which it has the least scarcity—land and labor. The overall strategy in the agricultural development of Bolivia must place emphasis, not on labor-saving devices, but on capital-saving devices.

Topographically, agriculturally and population-wise, Bolivia is divided into two distinct areas—the high Andean plateau and the tropic lands of the east. On the over-populated plateau, dollar investment will have to be limited to fertilizers, fungicides, spreading machin-

ery, improved seeds and practices and possibly foreign technicians, while bolivi-ano investment will have to be devoted to education, agricultural credit (nationally produced seed, cattle, housing, etc.,) and a well-organized extension service. The use of imported machinery is not advisable on three grounds, (a) the poor agricultural potential of the Altiplano, (b) dollar scarcity, and (c) surplus labor.

However, in the east, the substitution of labor for capital is difficult. In this area land and labor conditions are the reverse of those on the plateau, inasmuch as its agricultural potential is great and labor is scarce. Furthermore, the rigid social structure of the Indians of the plateau tends to conflict with the concept of modern farming, whereas in the east the nomadic Indian has no established pattern of land use which would act as a deterrent. Consequently, it would appear advisable to concentrate available dollar investment for the establishment of large efficient agricultural enterprises with the dual purpose of rapidly diminishing the chronic food deficit of the country

and creating conditions which would stimulate colonization from the plateau.

Another high-priority dollar investment being considered is the importation of tree-felling machinery to cut timber in the extensive forests of Bolivia for subsequent export to foreign countries. Exploitation may be carried in certain areas even to the degree of complete clearing.

At present, the Planning and Economics Branch of the Council of Agrarian Reform is working on a detailed plan for the expansion and development of Bolivian agriculture. This plan takes into account the participation of the different agencies, national and international, which work on agriculture, and gives a leading role to the Bank of Agricultural Credit. The nine-million-dollar gift granted by the United States will add impulse to agricultural development.

In the near future it will be possible to test some of the hypothesis and expectations advanced here against factual evidence. A subsequent article will be devoted to this task and to the study and analysis of the course of the reform.

Editor's Note: Since the above article was submitted to *Land Economics* by the author there has been published another paper which deals with the current agrarian development in Bolivia. It appears in *Foreign Affairs*, under the title, "Bolivia: Test of Technical Assistance," April 1954, pp. 473-481, and was written by Carter Goodrich who has been in Bolivia on leave from Columbia University.

The Role of Government in Influencing Changes in Housing in Baltimore: 1940 to 1950

By MORTON HOFFMAN*

Introduction

THE publication of data from the second national Census of Housing on standard metropolitan areas facilitates analysis of changes in the housing situation in individual areas over a decade—in locational distribution, inventory, tenure, and various physical and financial characteristics of dwellings. An investigation of the reasons for these changes in the 1940-to-1950 period is complicated by the war and postwar boom. Partly stemming from the "crisis" nature of this decade was the noteworthy participation in housing by a variety of federal and local governmental agencies, which suggests that special attention be devoted to the role of government in the changes that occurred.

This article examines the extent to which five selected governmental housing programs—public housing, the local program of housing law enforcement nationally acclaimed as the "Baltimore Plan," Federal Housing Administration and Veterans Administration mortgage insurance and loan guaranty, and rent control—have directly and indirectly influenced changes in the supply, location, tenure, and characteristics of dwelling units and occupancy in the Baltimore area from 1940 to 1950. It is recognized that this approach may be subject not only to conceptual and statistical limitations applying also on a national scale, but also to the arbitrariness of using a particular area.

Influence of the Federal Government

There is no suggested hypothesis, to the writer's knowledge, on the role of

government in influencing housing change in a metropolitan area.¹ Saulnier in his discussion of two papers² dealing with governmental participation in housing, presented at the 1950 Annual Meeting of the American Economic Association, stated: "The influence of government is now felt as a dominating force at all points in the home construction and home financing markets Whether federal policy has produced better housing than would otherwise have been possible is not easily determined on balance it has made real progress in this direction."³

Coleman's study of *The Impact of Government on Real Estate Finance in the United States*⁴ describes the far-reaching extension of governmental influence in the construction field during and after World War II.

"The control of construction operations through priorities and limitation orders; the control of rents, sales prices on newly built houses, prices of building materials, wages of construction workers and the price of certain building operations; the financing of industrial construction and the direct building of emergency housing . . . all resulted from extraordinary wartime powers."⁵

¹ Tom Dinell in *The Influences of Federal, State and Local Legislation on Residential Building in the Flint Metropolitan Area* (Social Science Research Project, Institute for Human Adjustment, University of Michigan, 1951) inventories and describes a great variety of legislation but is primarily concerned with the question of residential building within as opposed to outside the city.

² Lawrence N. Bloomberg, "The Role of the Federal Government in Urban Housing," pp. 586-598, and Sherman J. Maisel, "Policy Problems in Expanding the Private Housing Market," pp. 599-611. *Papers and Proceedings of the 63rd Annual Meeting of the American Economic Association* (Chicago, Illinois: December 27-30, 1950), *American Economic Review*, May 1951.

³ *Ibid.*, pp. 614-615.

⁴ Miles L. Coleman, *The Impact of Government on Real Estate Finance in the United States* (New York: National Bureau of Economic Research, 1950).

⁵ *Ibid.*, p. 154.

* Director of Research and Statistics, Housing Authority of Baltimore City.

At the present time, Colean holds, real estate credit is the main avenue of federal influence. Through this instrument the federal government has sought to accomplish objectives such as the extension of privileges to special groups such as low-income workers, war workers, and veterans. Mortgage credit has been used to influence the type of tenure, the character of the property (Federal Housing Administration standards of location, planning and construction), the level of prices (FHA or Veterans Administration appraisals and limitations on loan amount) and of apartment rents (FHA-insured financing and public housing dwellings). Credit devices have affected construction by virtue of the appeal offered the large contract builder by public housing, and the encouragement given large merchant builders by the FHA system.⁶

A recent study by Grebler⁷ reviews the implications of the extensive FHA and VA programs and the operations of the Federal National Mortgage Association in the secondary mortgage market. Careful consideration is given to the effect of FHA and VA aids on the total volume of construction, on widening the market for new homes, and changing the distribution of new construction as between dwellings for sale and rent.⁸ While little rental housing has been built since the end of World War II, he notes that FHA financed an overwhelming share of it.

The Baltimore Metropolitan Area

Baltimore typifies many American communities in that it has a blighted core,

⁶ *Ibid.*, pp. 155-157.

⁷ Leo Grebler, *The Role of Federal Credit Aids in Residential Construction* (New York: National Bureau of Economic Research, 1953).

⁸ Grebler (*Ibid.*, P.54) noted that about half the market for residential construction and mortgage financing for new housing has come to operate directly under FHA and VA auspices. However, FHA and VA starts, which reached a maximum of 52 percent of total private starts in 1947 and comprised 51 percent of the 1950 total, dropped to 39 percent in 1952 and 1953.

a rapidly expanding suburban area, and is a diversified industrial and port city. Somewhat special characteristics of the nation's sixth city are its age, its geographical location as a border city, its substantial Negro population, its strong tradition of home ownership, and its phenomena of the ground rent and the row house. Over 75 percent of Baltimore City's homes in 1940 had been built on sites which were not owned by the owner of the improvements.⁹ The high rate of home ownership is partly attributable to the popularity of the row house, which is cheaper to build and cuts maintenance and utility costs.

In the Baltimore standard metropolitan area—Baltimore City, Baltimore County and Anne Arundel County—the rate of population growth in the 1940-1950 period was 23.5 percent, the area outside the central city increasing at seven times the rate within the city. Baltimore City's population rose from 804,874 in 1930 to 859,100 in 1940 and 949,708 in 1950; the Baltimore County-Anne Arundel County total jumped from 179,732 in 1930 to 224,210 in 1940 and to 387,665 in 1950. The Baltimore standard metropolitan area (hereafter referred to as the s.m.a.) and the 1940 Baltimore Metropolitan District are not comparable, the latter representing a much smaller area.

In 1950 the housing supply numbered 277,880 dwelling units in Baltimore City and 114,383 units in the two contiguous counties. The latter figure is larger than the 96,107 units contained in 80 census tracts adjacent to Baltimore City and almost double the 61,982 units in the "urban fringe" portion of the Baltimore "urbanized area." Seventy percent of

⁹ Federal Home Loan Bank Board, *Waverly A Study in Neighborhood Conservation* (Washington: U. S. Government Printing Office, 1950) P. 11; on ground rents see Frank A. Kaufman, "The Maryland Ground Rent System—Mysterious but Beneficial," *Maryland Law Review* (College Park: University of Maryland, December 1940), pp. 1-72.

the dwellings in Anne Arundel County and 29 percent of those in Baltimore County were rural. More than half of Anne Arundel County and at least a third of Baltimore County were not within the confines of the Baltimore housing market area. While the northern portion of Anne Arundel County is an economic and business extension of the City of Baltimore,¹⁰ Anne Arundel County is 417 and Baltimore County 610 square miles, compared with 79 for the city and 73 square miles for the urban fringe. Moreover, Anne Arundel County has important agricultural, tourist, and vacation-serving industries, and much of its housing is seasonal in nature.

The extent of non-urban housing in the Baltimore s.m.a. limits the area's usefulness for purposes of this study. Consequently, more attention will be paid to Baltimore City and County, and less to Anne Arundel County. Relatively little information from the 1940 Housing Census is available for the s.m.a., although a considerable portion of non-Census published data and special tabulations obtained are available only on the entire s.m.a. basis.

Housing Changes, 1940 to 1950

Analysis of the effects of the governmental programs under scrutiny will be geared to specific changes in Baltimore's housing situation from 1940 to 1950 as indicated by Census data. The following important changes will be considered:¹¹

(1) The greater rise in the housing inventory of the non-central city components of the standard metropolitan area and the considerable rise in the outer two-thirds of

Baltimore City compared with the practically unchanged total in the blighted City core.

(2) The spectacular rise in home ownership, occasioned by new building for sale and the tremendous shift of units from renter-to owner occupancy in Baltimore City.

(3) The considerable drop in the average number of rooms per unit, particularly among rented dwellings, reflecting conversions of larger units, the shifting of larger 1-family homes to owner status, and the building of smaller size units after the war in the period of sharply rising construction costs.

(4) The continued predominance of the row-house within Baltimore City and a concurrent increase in multi-unit structures.

(5) The betterment of housing quality, with a much greater decrease occurring in the number of units lacking sanitary facilities than in the number of units structurally unsound.

(6) The sharp rise in rents and values, the 1950 figures reflecting the much higher price levels prevailing at the end of the decade, and a considerable increase in the number of mortgaged homes.

(7) The improvement of nonwhite housing conditions in some ways and the losing of ground in others. The rise in nonwhite occupancy was confined almost entirely to Baltimore City.

Influences on Tenure and Location

Later in this article the five governmental housing programs under review will be described individually to determine their part in these seven changes. This is best preceded by some general observations on the combined effect of public housing and the FHA and VA aids on the timing, tenure distribution, and location of additions to the housing supply, and the influences of those programs plus rent control and housing law enforcement on housing quality.

As privately-financed housing dropped sharply during the war years because of various restrictions imposed and the shortage of materials, a variety of public and private war-housing projects were undertaken in the Baltimore area. More permanent but fewer temporary public

¹⁰ Bureau of Business and Economic Research, University of Maryland, *Anne Arundel County, Maryland, Its Economic Development and Potential* (College Park: University of Maryland, June 1948), p. 15.

¹¹ This summary based on Chapters IV, V, and VI of the writer's Master's Thesis submitted to American University in June 1953, entitled *Changes in Baltimore's Housing, 1940 to 1950, With Special Reference to the Role of Government*.

war-housing units were built in Baltimore City than Baltimore County. In addition, four low-rent public housing projects in Baltimore City totaling 2,595 dwelling units were utilized for war worker occupancy on their completion in 1942 and 1943 (and reverted to low-rent use after the war).

FHA-insured housing built under Title VI of the National Housing Act during the war totaled nearly 13,500 dwelling units in the Baltimore area, all of which were for rent except 1,889 homes sold under Section 603.¹² The 4,045 rental dwellings built under Section 608 were located in Baltimore County, except for 306 in Baltimore City. About 7,500 rental units provided under Section 603 were dispersed more evenly in the s.m.a.—3,275 in the southern and western sections of Baltimore City; about 800 in Anne Arundel County; and 3,425 in Baltimore County, mostly in the industrial Dundalk-Sparrows Point-North Point area.

Title VI continued to be an important vehicle for governmental stimulus to the housing supply after the war, being incorporated as part of the Veterans Emergency Housing Program of 1946. While Section 603 tapered off, the postwar addition to the rental inventory under Section 608 more than doubled the wartime increment of 4,045 dwelling units. However, of the 10,430 units in "608" developments constructed since the war, 5,138 were completed by April 1, 1950, another 2,551 by January 15, 1951, and the remainder subsequent to that date.

¹² Data from records of Maryland Office, Federal Housing Administration. National Housing Agency tabulations of completed units programmed under the H-1 program for essential in-migrant war workers as of September 30, 1945, show a total of 17,725 units for the Baltimore area, of which 13,467 were for rent and 4,258 for sale. (The comparable national figures showed a 3 to 2 rental to sales relationship—313,951 to 195,528—compared with a 3 to 1 rental to sales proportion in Baltimore.) The difference between the H-1 programmed figure of 17,725 and the Title VI figure of 13,462 obtained from local records is probably accounted for by conversions and publicly financed units.

Other building or sponsorship of rental housing resulted from the "regular" programs of low-rent public housing and Section 207 of the National Housing Act.¹³ Additions to the rental supply stemming from these and the wartime-initiated programs by location within the s.m.a. are summarized in Table I. The increment from these sources constituted 40 percent of the increase in housing inventory in the case of Baltimore City and 37 percent in Baltimore County.

An outstanding role was also played by federal credit aids in the financing of new sales housing in the Baltimore area in the 1940's, especially in the postwar period. From 1940 to 1950 the number of owner-occupied mortgaged homes in the Baltimore s.m.a. rose sharply. As of August 1950, 63 percent of 20,477 mortgaged owner-occupied properties with one dwelling unit built from 1946 to 1950 had a VA-guaranteed or FHA-insured first mortgage.¹⁴ Of a total of 84,584 mortgaged single-family homes occupied by their owners FHA-insured mortgages comprised 13 percent and VA-guaranteed mortgages 18 percent.¹⁵ These data indicate clearly the great stimulus to postwar home ownership given by the veterans home loan guaranty and the mortgage insurance programs.

A calculation of the shift from renter to owner occupancy in Baltimore City in the 1940's is of general interest, and incidentally reveals the importance of the governmental role in sponsoring or providing rental housing. New private rental housing built between the two

¹³ For a comparison of the several FHA rental housing programs, see Federal Housing Administration, *How FHA Mortgage Insurance Operates*, Statement by Franklin D. Richards, Commissioner, FHA, Before the Subcommittee of the House Banking and Currency Committee, February 5, 1952, pp. 19-21.

¹⁴ U. S. Bureau of the Census. *U. S. Census of Housing: 1950. Vol. IV, Residential Financing, Part 2: Large Standard Metropolitan Areas*, Chapter 4, Table 8, p. 189.

¹⁵ The corresponding figures for the United States were 17 and 15 percent. *Ibid.*, p. XXXVI.

census periods comprised 14,080 dwelling units in 3-or-more-unit structures, and 5,304 rental units in 2-family structures,¹⁶ a total of 19,384. From Table I

TABLE I—NUMBER OF RENTAL UNITS BUILT UNDER PUBLIC LOW-RENT AND WAR-HOUSING AND SECTIONS 207, 603, AND 608 OF THE NATIONAL HOUSING ACT BALTIMORE CITY AND COUNTY: APRIL 1940 TO APRIL 1950

	Baltimore City	Baltimore County
Public Housing.....	9,364	3,771 ¹
Low-Rent.....	5,021	0
War-Housing.....	4,343 ¹	3,771 ¹
National Housing Act.....	7,210	9,587
Section 207 ²	362	552
Title VI.....	6,848	9,035
Section 603-wartime ³ ..	3,275	3,425
Section 608-wartime...	306	3,739
Section 608-postwar...	3,267 ⁴	1,871 ⁴
Total.....	16,574	13,358

¹ Exclusive of trailers, trailer spaces, and dormitories, which totaled 1,192 units and 100 spaces in Baltimore City, and 1,686 trailers in Baltimore County.

² Ten units built under Section 207 in Anne Arundel County.

³ 800 units under Section 603 built in Anne Arundel County section immediately adjacent to Brooklyn area of Baltimore City.

⁴ An additional 2,551 units built under the postwar 608 program were completed by January 15, 1951.

Source: Unpublished records and special tabulations of Housing Authority of Baltimore City, Public Housing Administration, and Division of Research and Statistics and Maryland Office, Federal Housing Administration.

above we know that rental housing constructed under Section 207 and Title VI accounted for 7,210 units or 38 percent of the 19,384 total. Other rental housing built included 9,364 public housing units and perhaps 12,000 units added through conversions.¹⁷ The total addition to the city's rental supply thus amounted to about 40,748. Rental units deleted from the housing supply by demolition and negative conversions (dwelling units converted to non-residential use or combined to create more living space for

one family) numbered an estimated 10,550, leaving a net addition to the rental inventory of 30,198. As Census data show, the rental supply dropped 4,717 units, apparently 34,915 units transferred from renter to owner occupancy in Baltimore City during the decade.

It is interesting to note the two-sided result of federal stimulation of rental housing in Baltimore via the "603" mechanism. Baltimore was one of the country's leaders during the war in terms of Title VI activity, and had one of the highest percentages of rental housing built under Section 603. However, the great bulk of the 7,500 "603" rental units in the Baltimore area (contained predominantly in 2-family structures) were sold to individual purchasers during or after the war, caught up in the maelstrom of forces making for a general transfer of dwellings to an owner status. (These forces included increased family income and liquid assets, a serious housing shortage, and limitation on earnings from rent control encouraging owners to take advantage of the unrestricted and very active sales market.)¹⁸ It may be concluded that the "603" mechanism fulfilled its mission of the moment by providing rental housing but also contributed to the phenomenal shift from rental to ownership status.

Locational Distribution of Housing

In the 1940-to-1950 decade the housing inventory in the Baltimore s.m.a. rose by 30.6 percent, compared with 17.5 percent in the city. Little change took place in the blighted area in the city's core, representing one-third of the city's dwelling supply in 1950, whereas the housing inventory in the remainder of the city had a substantial build-up, rising 26.7

¹⁶ Units authorized in 3-or-5 more unit structures from Bureau of Labor Statistics for January 1940-December 1949; estimate of rental units in 2-family structures made by writer on basis of local building permit records showing 8,332 units in 2-family structures, subtracting "603" units whose tenure was known, and assuming that one-half the remainder were for rent.

¹⁷ A Bureau of Labor Statistics pilot sample study of conversions in Baltimore estimated that 13,660 conversions, the bulk of which were rental units, occurred from 1940-1949. See B. Lipstein, "How Important Are Conversions in the Current Housing Scene," *Housing Research*, Housing and Home Finance Agency, Spring, 1952, pp. 1-14.

¹⁸ See Bureau of Labor Statistics, "Effects of Wartime Housing Shortages on Home Ownership," *Monthly Labor Review*, April 1946, p. 560.

percent. The rate of growth in the remainder of the s.m.a. was three times that for the outer two-thirds of Baltimore City. Table II summarizes the changes in the housing supply for the various components of the metropolitan area.

TABLE II—INCREASE IN DWELLING UNITS, BALTIMORE STANDARD METROPOLITAN AREA AND SUBDIVISIONS THEREOF: 1940 TO 1950

Area	1940	1950	Percent increase
Total Standard Metropolitan Area.....	300,246	392,263	30.6%
Baltimore City.....	236,442	277,880	17.5
Blighted tracts.....	91,055	93,618	2.8
Remainder of city.....	145,387	184,262	26.7
Remainder of Standard Metropolitan Area.....	63,804	114,383	79.3
Baltimore County.....	41,653	78,038	87.4
Anne Arundel County...	22,151	36,345	64.1

Source: U. S. Bureau of the Census, 16th Census of the United States, 1940, *Housing, First Series, Data for Small Areas*; Maryland, Table 4, and *Population and Housing, Statistics for Census Tracts*, Baltimore, Maryland, Table 4, U. S. Census of Housing: 1950. Vol. I, *General Characteristics*, Chapter 20, Maryland, Table 1, and U. S. Census of Population: 1950, Vol. III, *Census Tract Statistics*, Chapter 4, Table 3.

The greatest amount of new home building in the county portions of the s.m.a. occurred in the more closely settled areas adjacent to Baltimore City. Long-term factors responsible for the rapid growth of these areas include a comparative lack of further available space in the city, a desire on the part of thousands for the attractions of suburban living and lower taxes, and the increase in industrial activity of established and new industries in Baltimore County. The wartime speedup of this growth was mainly attributable to the Title VI and public housing programs, which were concentrated in war-booming industrial sections requiring housing for thousands of immigrant workers. More than 13,000 dwelling units provided under these programs were all located in the three fastest-growing districts of Baltimore County.

As Table I above revealed, more Title VI rental housing activity took place in Baltimore County than in Baltimore City, although the reverse held true for public housing. About three-quarters of the 1,889 wartime sales units constructed under Section 603 were located in the same areas as the rental units, constituting another push toward suburban area growth. The veterans home loan program was an influence in the other direction, new homes guaranteed by the VA from the program's inception in 1945 through 1950 reaching a considerably higher figure in Baltimore City (7,745) than in Baltimore County (4,683).

Analysis of the growth pattern within Baltimore City (grouping 168 census tracts into 16 areas) shows that Northwood and Brooklyn experienced the greatest percentage increases during the decade. Northwood is a very desirable residential section in the rapidly expanding northeast section of the city; six postwar "608" rental projects located in this area accounted for about one-fifth of its increment of 6,535 units. The growth of the Booklyn area is directly related to the industrial growth of the harbor area in the southern end of the city and is largely attributable to the 3,600 units added through private and public war-housing developments. A newly developed area for Negro occupancy, the Cherry Hill section in south Baltimore, grew rapidly because of governmental stimulus provided by public housing and FHA-sponsored activity under Section 603.

Other than conversions, the most substantial change in the housing supply of Baltimore City's centrally located 56-census tract area (designated as blighted by the Commission on City Plan in 1945)¹⁹ was the demolition by the Hous-

¹⁹ Commission on City Plan, *Redevelopment of Blighted Residential Areas in Baltimore* (Baltimore: Commission on City Plan, 1945), pp. 1-3.

ing Authority of Baltimore City of 3,338 dwelling units in seven slum clearance sites and the subsequent erection of 3,521 low-rent public housing units on these sites. Practically no new private homes were constructed in this area during this period.

Housing Quality

Baltimore City dwelling units with outside toilets dropped 75 percent, from 26,266 in 1940 to 6,499 in 1950. (As there were many instances where one outside toilet was shared by at least two units, the number of outside toilets removed was somewhat less than 19,767.)²⁰ Improvements in housing quality during the 1940's in American cities may be attributed in part to higher family incomes and the lack of alternative housing during the war, depriving many families of an opportunity to shift to a higher housing standard, causing owner-occupants to repair existing structures instead. In Baltimore the activities of the housing law enforcement agencies operating under the city Housing Code²¹ based on an "Ordinance on the Hygiene of Housing" enacted in 1941 played an important part in improving plumbing facilities. These agencies included units of the city Health Department's Sanitary Section—the Housing Division (subsequently renamed the Office of Housing Law Enforcement and the Housing Bureau), the Community Sanitation Division, and the Rodent Control Division—and a group of 20 Police Sanitarians. All of these agencies, their work buttressed by a Housing Court established in 1947, played a part in the

elimination of Baltimore's outside yard toilets, referred to locally as "frostproof yard hoppers."

The Housing Code requires a toilet inside the structure but has no requirement for an inside bath. This may explain in whole or in part the fact that the increase in dwelling units with private indoor flush toilets was 61,624, compared with a rise of 56,376 in the number of inside private baths. It might be assumed that only the difference between these figures of 5,348 may be attributed to the Housing Code, and the remainder to the operation of economic forces. However an absentee landlord, forced to remove his outside hopper, may have also decided voluntarily to install a bath at the same time with a view to justifying as large an increase in rentals as the rent control regulations would permit.

Dwelling units recorded in the 1940 Census as "needing major repairs" totaled 19,670 or 9.2 percent of total units reporting; units enumerated as "dilapidated" in 1950 were 17,597 or 6.6 percent of those reporting. In contrast to the considerably improved picture in plumbing facilities, the numerical closeness of the figures and the less inclusive nature of the 1950 "dilapidation" concept suggest little or no change in the number of structurally deficient units for the decade.²² Inasmuch as the Housing Authority of Baltimore City demolished 1,642 badly deficient units recorded in the 1940 Census, and housing law enforcement activities may possibly have shifted a small number from structurally unsound to sound condition, and increased family income undoubtedly permitted many families to rehabilitate their

²⁰ "Frostproof hoppers" removed under permits issued by the Division of Plumbing, Baltimore City Health Department, totaled 12,500 from 1940 through 1949, and 14,634 through 1950. Source: Annual Reports, Baltimore City Health Department. Health Department officials estimate that about 2 percent of outside hoppers are removed illegally without permits.

²¹ Baltimore City Health Department, *City Housing Code* (Baltimore: 1943).

²² The Census Bureau cites "the opinion of a number of qualified housing economists that if the two definitions were applied in the same Census, the count of 'dilapidated' units would be smaller than the count of units needing 'major repairs'." U. S. Bureau of the Census, *U. S. Bureau of Housing: 1950, Vol. I, General Characteristics, Part I, U. S. Summary*, p. XIX.

dwelling, the data also suggest that dwelling units on their way down in 1940, but still structurally in fair shape and possessing basic facilities, had slipped down in housing quality during the decade.

Using the few available census criteria, a comparison of "substandard" units in Baltimore City indicates a drop from 61,610 dwelling units in 1940 (28.9 percent of the total supply) to 53,276 units (19.8 percent) in 1950. A number of limiting factors make it difficult to gauge the significance of this decrease of 8,335 units. In 1940 "substandard" ordinarily meant to Census-users a unit needed major repairs or lacked a private toilet or bath or running water. The 1950 concept, as used by housing, planning, and redevelopment agencies, signifies that a dwelling unit is dilapidated or lacks a private toilet or bath or *hot* running water. "Dilapidated" is a much more stringent, much less inclusive term, than its 1940 predecessor "major repairs"—but the 1950 concept of substandardness is broader in that it utilizes the lack of *hot* running water as a criterion of substandardness. Other problems in comparing the substandard totals derived from the Census are the number of units not reported and the quality and training of enumerators.²³

Role of Housing Programs

Public Housing. The Housing Authority of Baltimore City, set up in 1937, built nine low-rent public housing projects in 1941 to 1945 totaling 5,021 units. Seven of these were slum-clearance developments in the centrally located blighted area, and two were vacant site projects comprising 1,500 units built at the eastern and southern ends of the city.

²³ For a critical review of Census criteria of housing quality see Allan A. Twichell "Measuring the Quality of Housing in Planning for Urban Redevelopment" in *Urban Redevelopment: Problems and Practices*, Coleman Woodbury, Editor. (Chicago: University of Chicago Press, 1953), pp. 21-25.

Clearance of the seven slum sites involved the demolition of 3,338²⁴ badly deteriorated dwellings and replacing them with 3,521 low-rent units of standard construction. During the war years the federal government built an additional 4,900 dwelling units for war workers on vacant land in the Baltimore City area, which have been managed by the Baltimore Housing Authority. Four of these projects (1,245 units) were built of temporary construction,²⁵ two of them Negro-occupied projects in the Baltimore County area adjacent to Baltimore City (Turner Station) where a small Negro community had been in existence. Also 1,000 temporary demountable units were originally built at Brooklyn Homes (in addition to 500 permanent units) within the city limits, of which 421 had been removed from the housing supply by March 1950. Of the total Authority-managed program of 8,938 units in Baltimore City in March 1950, all but 1,323 units were of permanent construction.

The median number of rooms per rental unit in Baltimore City was 4.27 in 1940, and 3.60 in 1950. Public housing units were larger than the latter figure, the median for the low-rent units being 4.35 and for war housing 4.53. The process of conversion and the shifting of larger size rental units to owner occupancy caused the lowering of the room size distribution in the city's rental supply during the decade. Public housing served to raise the average number of rooms per rental unit during the ten

²⁴ The 1940 Census lists only 1,642 units on the blocks involved in the seven sites, the remainder being vacant and boarded up prior to demolition, or already in the process of demolition by April 1940.

²⁵ All of these dwellings were standard, as measured by Census criteria. However, the temporary war-housing projects, as in the case of some of the "603" defense housing developments, were not of the same quality as others built under public housing or FHA insurance auspices. All temporary war-housing projects in the Baltimore area are slated for removal from dwelling use by 1956.

years, although it also contributed to the drop in the median number of rooms per occupied unit of the total inventory from 5.5 to 5.1.

The addition of the public housing supply with its units of standard construction and its demolition of substandard units improved the quality of the city's rental housing. As relatively little new private housing (an estimated 2,400 units) was built for Negro occupancy in the Baltimore area in the 1940's, the addition of 4,279 units for Negro occupancy through public housing may also be singled out as an important factor in Baltimore's housing during the decade.

For the city as a whole, the median gross rent was \$28.27 in 1940 and \$45.42 in 1950. By contrast the average gross rent in 5,021 permanent public housing units occupied by low-income families was \$29.75 as of April 1, 1950. The median contract rent for Baltimore was \$23.60 in 1940 and \$40.30 in 1950. In the 4,820 public war-housing units (inhabited by somewhat higher income families than the low-rent projects) the average contract rent (including all utilities except heat) was \$36.41 as of March 1950. In terms of Census categories of structural type, public housing contributed more than its proportionate share of units in "5 to 9" and "10 to 19" dwelling unit structures.

Compared with the remainder of the rental housing supply, the characteristics of public housing in Baltimore may be summed up as tending toward larger size units more recently built of better quality, somewhat lower rents, and located in the city's center, east and south, in structures containing more units on the average than other structures. Forming an important segment of Baltimore's total rental housing in the 1940's, public housing played an even larger role in the housing market activities of the

blighted centrally located third of the city and in constituting the largest share of new housing made available for Negro occupancy during the decade.

Housing Law Enforcement. The enforcement effort during the war period was devoted mainly to the correction of unsanitary and unsafe housing related to the city's large influx of war-industry workers and their families. Experience gained during these years, according to an official account, "demonstrated that an enforcement program under normal conditions could achieve much more in the way of satisfactory compliance with the housing code on a block or area basis than by spot enforcement based largely on complaints."²⁶

In 1945 the Mayor asked an inter-departmental group of officials to coordinate their efforts toward correcting flagrant violations of city ordinances (the Building Code, the Fire Prevention Code, the Electrical Code, the Zoning Ordinance, and the Housing Code) in areas where bad housing and unsanitary living conditions existed. The Committee selected a block (later known as Block No. 1) in the southern part of the City, believed to be fairly characteristic of its substandard Negro housing. Representatives of the enforcement agencies—the Health Department, the Bureau of Buildings, and the Fire Department—made inspections of each property in the block, noted all existing violations, and issued legal notices for their correction. As a result of this first trial late in 1945 of the coordinated law enforcement program, plans were made to expand it to adjoining blocks. Later, six areas of the City, consisting of 308 blocks, were selected as suitable. After the first block survey was concluded it was decided that inspections in this intensive area approach were to

²⁶ Huntington Williams and Wilmer H. Schulze, "Housing Law Enforcement and the City Health Department's Attack on Slums," *Baltimore Health News*, December 1948.

be conducted by the Health Department only, other agencies to be called in for special problem cases.

A complete analysis of the total housing law enforcement accomplishment would require an evaluation of the citywide and area work of the four agencies involved.²⁷ The Community Sanitation Division was first in this field, with the Housing Division being established in 1943, and the Rodent Control Division and Police Sanitation unit set up in 1947. From 1940 through 1946 the first two of these agencies were responsible for the removal under permit of 6,633 outside hoppers, and all four participated in the removal of an additional 5,967 in 1947 through 1949. The Police Sanitarians corrected 108,443 violations in all parts of the city from July 1947 to September 1950. Most frequent of these corrections (which included multiple violations and revisits of certain dwellings) represented sanitary and environmental improvements such as the securing of garbage containers (30,954), tearing down of backyard fences (14,884), cleaning and grading of yards (13,693), the removal of outside hoppers (5,624), streets cleaned (5,476) and yard sheds removed (5,062). Structural improvements were much fewer—1,215 floors repaired, 1,115 roofs repaired, 787 walls repaired, 320 ceilings repaired, etc. About two-fifths of the Rodent Control Division's workload (17,000 violations corrected from January 1948-March 1950) was on a block basis and the remainder on a citywide complaint basis. Housing and environmental complaints coming to the Health Department not within the purview of the Housing Division specific areas, or the Rodent Control Division's rat eradication and rat-

proofing activities, were handled by the Community Sanitation Division.

Probably the most comprehensive housing improvement arising out of the law enforcement tool stemmed from the area program of the Health Department's Housing Division. The total citywide enforcement effort of this unit from 1940 through March 31, 1950, included 6,412 structures inspected and 13,015 dwelling units "improved."²⁸ Unfortunately, information on the types or extent of these improvements is not available. In an effort to test the results of this Division's area activities as measured by Census data, an examination was made of 1940 and 1950 data on blocks in the four areas of the city on which intensive enforcement work had been completed by April 1, 1950. This comparison is subject to the limitations of changes in Census terminology previously discussed.

Collectively the four areas showed a decline in substandardness from 72.0 percent in 1940 to 59.5 percent in 1950, compared with a citywide drop from 28.9 to 19.8 percent. Two of the areas (Mount Clare and "Urban") improved more, and two (Franklin and Sharp Street) improved less than the city as a whole. The section that showed the greatest improvement, Mount Clare, is the only one of the four outside the blighted area zone. Sharp Street, one of the two areas showing least improvement, is noted as a "rock bottom slum."

As in the case of the city generally, the improvement in plumbing facilities for the 80 blocks was much greater than in structural condition (1,082 units needing major repairs in 1940 and 712 designated

²⁷ Data in this paragraph from *Annual Reports*, Baltimore City Health Department, 1940 to 1950, and unpublished tabulations of Police Sanitation unit and Rodent Control Division.

²⁸ *Annual Reports*, Baltimore City Health Department, 1940 to 1950, and unpublished data, Housing Bureau, Baltimore City Health Department. For the most recent official report of the activities of the latter agency, see Housing Bureau, Baltimore City Health Department, *The Baltimore Plan of Housing Law Enforcement* (Baltimore: May 1952).

as "dilapidated or no running water" in 1950). Inasmuch as "dilapidated" is believed to call forth a smaller count than "major repairs," it is difficult to determine the extent, if any, of the structural improvement in these areas. In spite of the terminological difficulties in this comparison, the large proportion of substandardness remaining in 1950 indicates the limitations of law enforcement when applied to slum areas in an advanced state of deterioration. It is possible that more far-reaching improvements might ensue if this type of approach was applied to areas on their way down, but of a higher level of housing quality. This is the kind of area utilized under the experimental "Pilot" area approach (initiated in 1951) based on a 27-block area in East Baltimore, which was 33 percent substandard in 1950.²⁹

The Census does not enumerate the physical environment of dwellings. And Allan Twichell has observed that houses may be entirely free from the defects reported by Census "and yet be either unlivable or poor enough to involve problems of definite concern for public policy. Significant factors not covered include natural lighting, means of egress in case of fire, size of rooms, operability of plumbing, dampness, specific fire hazards and infestation."³⁰ It should be recognized therefore that many improvements accomplished under housing law enforcement are of such a nature that would not be reflected in the few Census criteria of housing quality but may nevertheless constitute marked improvement in the housing environment. Many other improvements, such as putting an outside toilet inside, may still leave the unit

substandard because the toilet might be inside the structure but shared by the occupants of two or more dwelling units and, therefore, not be private. Similarly a private inside toilet could be squeezed inside even a small unit in an old structure, but space (or the landlord) might not permit the installation of private bathing facilities. Finally the objective of housing law enforcement activities in Baltimore or any other city is only to bring existing housing up to the minimum standards prescribed by the community's housing code, which may not preclude many improved dwelling units from a "substandard" classification based on more rigid criteria.

FHA Mortgage Insurance. It is more difficult to trace the direct and indirect effects of government guarantee and insurance programs in influencing changes in housing characteristics in a particular community than in the case of public housing or law enforcement. However, the volume of construction financed through the federal credit aids and available data on the size, age, financial, and structural characteristics of these units furnish suggestive evidence as to the general direction of influence exercised.

A total of 126,514 property improvement loans were insured under Title I of the National Housing Act from 1940 to 1950 in the Baltimore s.m.a.³¹ This was an average of 11,501 a year, more than double the annual rate of 5,215 notes insured in 1934 to 1939 in the Baltimore metropolitan district.³² As a breakdown of the types of improvements on properties involved is not available for individual metropolitan areas, the proportion of improvements made to homes in the Baltimore area in the 1940's

²⁹ When data become available on the "before" and "after" surveys that have been conducted of the "pilot" area (half a Census tract) using the housing appraisal technique of the American Public Health Association, a much more searching and useful evaluation of housing law enforcement in Baltimore will be possible.

³⁰ Allan A. Twichell, *op. cit.*, p. 21.

³¹ Unpublished tabulation, FHA Division of Research and Statistics.

³² Federal Housing Administration, *FHA Homes In Metropolitan Districts* (Washington: Government Printing Office, 1942), p. 79.

which were financed via Title I cannot be determined.

A recent FHA report³³ reveals that in the 1935 to 1950 period in the Baltimore s.m.a. 28,130 new and existing 1- to 4-family home mortgages were insured under Section 203 of the National Housing Act. The 16,317 new 1-to 4-family homes insured from 1941 to 1950 (64 percent of which were built in 1941 to 1946) represented a considerable proportion of new homes built in the Baltimore area in the 1940's. Existing homes insured in the same period equalled only one-fourth this amount, 4,250.

New homes insured in the Baltimore metropolitan district under Section 203 in 1940 were much larger than those insured in 1950 in the Baltimore s.m.a. although the median value of the 1940 group was \$5,391, compared with \$8,888 for those insured ten years later. (No data are available from FHA on the size of Section 203-insured homes for other years of the 1940's.) In 1940 the

median number of rooms of insured homes was 5.86, contrasted with 5.02 for the 1950 group. The latter figure was almost one full room below the median number of rooms of all owner-occupied units in the city in 1950 (5.98), and about .4 of a room below the median number of rooms, 5.41, owner-occupied units built in the s.m.a. 1945 or later. Of course, 1950 was a year of rising construction costs, and the 5-room "economy" row house was probably typical of a large proportion of home building in that year in the Baltimore area, whether FHA-insured or not.

Table III compares 1950 Census data on the median size and other property characteristics of FHA-insured homes in the Baltimore area in 1950 with homes having VA-guaranteed and conventional first mortgages. The interest rate for the three types of mortgages were 4.5 percent, 4.0 percent, and 5.5 percent, respectively. Other Census data not shown reveal that the majority of the government-insured single family properties had been acquired as new homes compared to only one-fourth of those with conventional mortgages.

³³ Federal Housing Administration, *FHA Homes in Standard Metropolitan Areas, 1950* (Washington: Government Printing Office, 1953), data on Baltimore.

TABLE III—SELECTED PROPERTY CHARACTERISTICS OF OWNER-OCCUPIED PROPERTIES WITH ONE DWELLING UNIT BY GOVERNMENT INSURANCE STATUS OF FIRST MORTGAGE, BALTIMORE STANDARD METROPOLITAN AREA, 1950

	FHA- Insured Properties	VA- Guaranteed Properties	Conventional Mortgage Properties
Total Properties.....	10,772	14,809	59,003
Median number of rooms.....	5.25	5.75	5.99
Percent built since 1945.....	39%	57%	13%
Median Purchase Price.....	\$6,600	\$7,700	\$5,000
Median Value.....	\$8,100	\$8,600	\$7,600
Median debt as percent of value.....	75%	73%	40%
Median total mortgage loan as percent of purchase price..	88%	94%	74%

Source: U. S. Bureau of the Census. *U. S. Census of Housing: 1950*, Vol. IV, *Residential Financing*, Part 2: Large Standard Metropolitan Areas, Chapter 4, Table 8, pp. 189-191.

Wartime units built in Baltimore under Section 603 were predominantly 2-family unit structures. By contrast, the projects constructed under Section 608 were large-scale multi-unit rental developments, three developments consisting of elevator apartment buildings constructed in 1950, and the other 95 projects garden-type developments of two or three stories, with structural types falling predominantly into the Census categories of "10 or more," "5 to 9," and "3 or 4 unit" structures. The "207" projects were also multi-unit, garden-type developments.

A comparison of the characteristics of the postwar "608" projects³⁴ with 1950 data on the total rental inventory show the "608" units as half a room larger and with twice the contract rent. These differentials in unit size and rent are much less pronounced when the "608's" are compared with rental units built 1945 or later.

Housing for Negro occupancy built under Title VI in Baltimore City and County in the 1940-1950 decade numbered 1,834 rental and 500 sales units. The increase in nonwhite housing within Baltimore City resulted from public housing, the 1,569 new private dwellings built under Title VI, but mostly through the shifting of units from white to nonwhite occupancy and the conversion process. Of Baltimore County's increase of 1,831 nonwhite-occupied units, 904 were in three public war-housing projects, 500 in a wartime "608" project, and 265 units were in three "603" projects, these three sources accounting for almost all of the increase. The social dynamics of the situation in the Baltimore City area, as in many metropolitan areas throughout the country, to a considerable extent reflect the flight to the

suburbs for the ordinary reasons, plus moving to exclusively white areas, while the Central City situation reveals the reluctant turning-over to the hemmed-in Negro community of additional older residential areas in western, north-central, and northwestern Baltimore.

VA Home Loan Guaranty. The VA role in financing new and existing construction in the Baltimore area in the postwar period was much greater than that of the FHA. Mortgages on new homes guaranteed veteran purchasers by the VA from the program's inception in 1945 through 1950 totaled 12,428 in Baltimore City and Baltimore County,³⁵ twice the FHA-insured volume under Section 203 of 5,990 for the same period in the Baltimore s.m.a. (which also includes Anne Arundel County). On existing homes, VA activity was more than three times that under Section 203 for the six-year period, 12,933 contrasted with 3,844. The VA guarantee applied to almost twice as many new and existing homes in Baltimore City as in Baltimore County. Data showing the breakdown of the VA program are provided in Table IV.

TABLE IV—FIRST AND SECOND MORTGAGES GUARANTEED BY VETERANS ADMINISTRATION: BALTIMORE CITY AND COUNTY 1945-1950

	New Construction	Existing Construction	Total
Baltimore City.....	7,745	8,970	16,715
Baltimore County....	4,683	3,963	8,646
TOTAL.....	12,428	12,933	25,361

Source: Loan Guaranty Section, Baltimore Office, Veterans Administration.

As might be expected in view of their veteran status, owners of mortgaged properties with VA guarantees are predominantly below 35 years of age. Nonwhite owner-occupants comprised 8.6 percent of all VA-backed mortgages in the Baltimore s.m.a., which contrasts with 12.0 percent of properties with conventional

³⁴ Compiled from unpublished records of the Maryland State Office, FHA.

³⁵ Information furnished by Loan Guaranty Section, Baltimore Office, Veterans Administration; data on Anne Arundel County unavailable.

mortgages and only 1.1 percent of FHA-insured mortgages. Of 7,723 mortgages on nonwhite owner-occupied single family homes in 1950, 1,089 were under VA and 113 under FHA auspices.

Rent Control. Only fragmentary statistical data are available on the status and characteristics of units covered by rent control and the effects of rent control on Baltimore's housing from 1940 to 1950. Rent Stabilization officials estimate that 80 to 90 percent of controlled units in the Baltimore area in 1950 (number unknown) had received a rent increase, which approximated 15 percent for most. As of February 1, 1950, luxury apartments of 5 rooms or less renting for more than \$100 in structures with 4 or more units were decontrolled in Baltimore.

While the Baltimore data are inadequate to confirm hypotheses on the direct and indirect effects of rent control, it is important for our purpose to restate some assumptions on possible effects. Among these hypotheses are the holding down of rents for controlled units, the stimulation of conversions, and a shifting of single-family homes to owner occupancy. Most housing economists who have written on the subject believe that rent control was an important factor in reducing the volume of new rental housing construction.³⁶ It may also be speculated that rent control by deterring landlords from making needed repairs has been conducive toward lessened maintenance of existing housing, consequently making for a lower level of housing quality in the rental supply of 1950 than would have existed in a free market.

In addition to the holding down of rents on a gradually decreasing segment

of the rental supply, the byproduct effects of rent control certainly played a large role in the behavior of the housing market in Baltimore in the 1940 to 1950 decade, particularly in the subtracting of larger-size units from the rental supply occasioned by shifting of larger-size dwellings to owner occupancy and the conversion of dwelling units. The BLS study of conversions in Baltimore showed that 83 percent of all conversions were in single-family, noncommercial structures and that 69 percent had 3 or fewer rooms.³⁷ It is difficult to ascertain the extent to which any single factor such as rent control influenced the huge transfer of homes from a tenancy to home ownership status.

Limitations of Data

Although the user of Census data, comparing 1940 and 1950, is confronted by difficulties stemming from changes in terms and definitions in such fields as housing quality, Census data, terms, and procedures facilitate to a great extent the task of delineating changes in the size and character of the housing supply in a single metropolitan area. It would be helpful in measuring the role of government if large private and public housing projects constituted separate enumeration districts (or some other common denominator of measurement); this would permit more precise comparisons than have been possible in this paper. In view of the fact that federally-aided local redevelopment programs have been added to the accepted array of governmental techniques in the housing field in the United States, the number of projects under some type of public aid, sponsorship, or insurance may be even larger in 1960 than in 1950. This underlines the importance of tabulation and availability of data on these develop-

³⁶ Leo Grebler, "Implications of Rent Control Experience in the United States," *International Labour Review*, April 1952, pp. 7-9. For a contrary view in which it is argued that the natural forces in the imperfect and inefficient housing market so inhibit the production of new rental housing that rent control has little effect, see Lloyd Rodwin, "Rent Control and Housing," *Social Research*, September 1950, pp. 302-319.

³⁷ B. Lipstein, *op. cit.*, p. 6 and Table 7, p. 11.

ments individually and collectively which would permit more accurate comparisons with the remainder of the area housing supply and with similar developments throughout the country. As the participation of all levels of government in housing is unlikely to diminish materially, it would also seem advisable public policy to gather and evaluate more data on the effects of these programs in different metropolitan areas, as well as on the national basis.

Measurement of governmental influence as a determinant of housing change, on a national or local scale, is beset by conceptual limitations. It is difficult to single out individual causes, be they government housing programs or market forces, as solely or primarily responsible for specific changes when many related factors are moving in the same direction. The precise effect of federally-built-or-insured housing on the pattern of residential development in the Baltimore area in the 1940's is impossible to determine; many of the same areas would have been built up, sooner or later, without governmental stimulus. Liberalized credit terms offered under federal insurance programs—smaller downpayments, longer amortization periods, and lower interest rates—probably served to increase the purchase of medium-and lower-priced homes. However, as Grebler has pointed out, "the reduction of downpayments may have had the effect of causing a number of . . . purchasers to devote a smaller proportion of their liquid assets to this purpose than they would have done otherwise, or to buy more expensive houses."³⁸ Housing economics today has only partial knowledge of the effects of different variables on housing demand, such as income, price movements, changing tastes, and credit

facilities,³⁹ variables which were particularly volatile during the war and postwar periods. Progress in research along these lines might also throw light on the potential and limitations of governmental housing policies and programs in causing housing change.

Summary and Conclusions

The part played by the five governmental housing programs under review in influencing seven important changes in Baltimore's housing situation from 1940 to 1950 is indicated briefly below.

(1) FHA Title VI programs provided a larger increment to the housing supply outside than inside Baltimore City, while a much larger percentage of the public housing total was contained within the city; the VA guaranty applied to many more new homes for sale in Baltimore City than in Baltimore County.

(2) The increase in home ownership was greatly facilitated by the liberalized credit and low downpayment provisions of the federally-backed guarantee and insurance programs. The FHA and public housing programs provided the bulk of new rental housing, the latter program constituting the only substantial source of new good quality rental units for Negro families. Rent control probably played a large role in the subtraction of units from the rental supply.

(3) The public housing and the postwar FHA rental housing program under Section 608 had larger unit sizes than the remainder of the rental supply in 1950. Reflecting the postwar trend toward building smaller size homes, sales homes insured by FHA in 1950 were much smaller than those insured in 1940.

(4) The "608" and public housing programs departed from the 1-family row house pattern of Baltimore City with a high proportion of dwellings sponsored by or built by them in 5-or-more-unit structures.

(5) Factors operating to alter the quality distribution of Baltimore's housing stock during the decade included the not dilapidated condition and presence of basic facilities of practically all new units built. The rise in family income and the wartime housing

³⁸ Leo Grebler, *The Role of Federal Credit Aids in Residential Construction*, op. cit., pp. 25-26.

³⁹ Sherman J. Maisel, "Variables Commonly Ignored in Housing Demand Analysis," *Land Economics*, August 1949, p. 274.

shortage led to a wholesale improvement in the existing supply, with some FHA assistance in financing modernization and repair loans. The existing housing supply was aided by housing law enforcement activities, more so in the case of plumbing facilities than in structural condition. Public housing slum clearance operations replaced 3,400 slum homes with 3,500 decent homes at low rents; 1,500 additional low-rent public housing units were built on vacant land, as were 5,000 public war-housing units. FHA's Section 608 developments also improved the quality of the rental supply.

(6) The rents of public housing projects served to lower, and postwar "608" projects to raise, the rent distribution in 1950. While units covered under rent control rose only moderately, rent control was a factor in causing many lower priced units going completely out of the rental market and being replaced by higher-priced, converted, or new units. The law enforcement program may have influenced some rise in rents, in that landlords making required improvements in units

with controlled rents were ordinarily permitted compensatory rent increases.

(7) Within the city, substantial accessions to the Negro housing supply came through public housing, with a lesser role being played by the FHA Title VI programs. In Baltimore County the small addition to Negro housing came almost entirely from public housing and Title VI. Federal credit aids played a very small part in financing the rise in home ownership among nonwhites.

While the importance of economic forces and conceptual and statistical limitations preclude the conclusion that government was *the* dominating force in causing housing change, the several government programs reviewed collectively played a formidable role in influencing a number of significant changes in Baltimore's housing in the 1940 to 1950 decade.

Plantation Agriculture in the United States: Seventeenth to Twentieth Centuries†.

By PAUL S. TAYLOR*

TIME has etched the image of a plantation as a large agricultural enterprise run by a white-skinned operator called a planter, using numerous Negro slaves to grow cotton, rice, indigo, sugar or tobacco on great landholdings in southern States. The outlines of this classic model are impressed so sharply that the plantation system in the United States has seemed an institution belonging peculiarly to the South, and to the period of slavery before the Civil War. Despite occasional amendments and scholar's notations to the contrary, this image has tended to remain, stereotyped as to place, time, race and crop, and as to forms of capital investment, management and labor. Certainly a conception that is so limited is inadequate if the full light of history is to shine upon agricultural enterprises of the present. Plantation agriculture does not lack for variety.

Freeing ourselves from the rigidity and dominating influence of the stereotype is a slow process. As late as 1900 the distinguished Virginia historian, Philip A. Bruce, was so impressed with the classic model that he—and others with him—believed that the end of slavery had spelled the doom of the plantation system itself. As a sort of epitaph to the institution he set down as his judgment that “thirty-five years after Appomattox, the ruin of the economic and social system which prevailed [in the South] in the age

of slavery and of the large plantation is complete.”¹

By looking too much at one area in one period of the past, and too little at his own present, Bruce managed to conceal the vigorous survival of plantation agriculture from his own eyes. He was not long in being caught up. His fellow-Southerner, Alfred H. Stone of Mississippi, assured the American Economic Association in 1901 that Bruce was mistaken: the plantation system was still in a flourishing condition, at least in the Mississippi Delta.² Stone also taxed the Bureau of the Census with contributing to the prevailing illusion that the plantation was dead, and cited the official practice of reporting tenant holdings that were parts of a “plantation” operating under single control, simply as so many separate “farms.”³

Under spur of this criticism the census of 1910 collected data in southern states to show when so-called tenant “farms” were in fact parts of a unified plantation operation. It set up the classification “tenant plantation,” and defined it as a “continuous tract of land of considerable area under the general supervision or control of a single individual or firm, all or a part of such tract being divided into at least five small tracts, which are leased

¹ Philip A. Bruce, “Social and Economic Revolution in the Southern States,” *Contemporary Review*, July 1900, p. 59.

² Alfred H. Stone, “The Negro in the Yazoo-Mississippi Delta,” paper read at the American Economic Association, Washington, D. C., December 1901, in Alfred H. Stone, *Studies in the American Race Problem* (New York: Doubleday, Page & Company, 1908), pp. 89-90.

³ *Ibid.*, pp. 90-91.

† This paper stems from research supported by the Bureau of Business and Economic Research of the University of California. Beverly Starika assisted in its preparation.

* Professor of Economics, University of California.

to tenants."⁴ It found tenant plantations in the South numbering between 22,000 and 40,000.⁵

In 1916 the census took the additional step of recognizing that large-scale "farms" using wage workers were also plantations in fact, even if not so identified in prevailing usage. As measure of the minimum size of wage-labor operation that could be regarded properly as a plantation, the census decided at that time to equate an annual payment of \$1,000 in wages with the use of five tenants.⁶ In tabulating the 1910 statistics of wage-labor plantations on this basis, it found about 15,000 in eleven southern states, and about 62,000 in the rest of the country.⁷ In these ways the census began clarification. Plantations were not confined to a region any more than to a single

labor system. Large-scale agricultural enterprises were "plantations" even if official recognition had lagged and local usage still called them "farms."⁸

Eight years after the census made this special study, an agricultural economist of the Bureau of Agricultural Economics, C. O. Brannen, defined a plantation as a "unified agricultural organization of considerable size under one management, of practically a continuous tract of land, operated as a single unit with respect to the methods of control of labor and products"⁹ His definition provides a good tool for freeing the plantation concept of the rigid limitations of place and time, race and crop, and the forms of capital investment, management and labor imposed by the classic model. It should be used to reveal the plantation system wherever, whenever, and in whatever forms it may be found. It is as important today to recognize that the plantation system is characterized by variety, and to try to identify some of its principal variants, as it was once to understand and delineate the archetype.

The notion that the plantation system depends on slavery was never true. The rise of slavery followed rather than preceded the beginnings of plantation

⁴ Thirteenth Census of the United States, 1910 (Washington, D. C.: Government Printing Office, 1913), Vol. V, p. 878. No further "tenant plantation" schedules were taken until 1940. In that year the definition of "tenant plantation" was broadened to include those enterprises in the South that regularly employed five or more families if at least one of them was a cropper or other tenant; the others might be wage laborers. In 1945 it was defined as an enterprise of two units or more, one of them operated by a cropper or other tenant. In 1950 "tenant plantation" in the South was redefined to require that all units except the "home farm" be cropper-operated. The name of the schedule was changed from "plantation" to "multiple-unit." See 1950 United States Census of Agriculture (Washington, D. C.: Government Printing Office, 1952) Vol. V, part 2, pp. 8, 11-12.) Possibly this change in designation was dictated by the great reduction in minimum size of enterprise covered by the schedule, from five units to two.

⁵ Thirteenth Census, Vol. V, p. 881. Differences in interpretation of the enumerators' returns account for the wide range between figures. See C. O. Brannen, *Relation of Land Tenure to Plantation Organization*, United States Department of Agriculture Department Bulletin No. 1269 (Washington, D. C.; Government Printing Office, 1924), p. 4, n. 1.

⁶ Bureau of the Census, *Plantation Farming in the United States* (Washington, D. C.: Government Printing Office, 1916), p. 30. The study was under the direction of John Lee Coulter of the Census department, assisted by a staff drawn from universities and agricultural colleges.

⁷ *Ibid.*, pp. 31, 33. "While funds did not permit the Census Bureau to make a study of the extent of the tenant plantations except as shown for the 325 southern counties, an investigation pertaining to wage labor plantations has been made for the entire United States." (*Ibid.*, p. 29.) Schedules of "large-scale farms" using wage-labor continue to be taken by each succeeding census in all parts of the country.

⁸ The census study of plantation farming noted that "various authorities" had strongly recommended that census enumerators should take a "plantation schedule" "in all parts of the country," not only in the South. This recommendation was not followed. (*Ibid.*, p. 6.) So long as the diversity of form of large-scale enterprises continues, and certain of these forms—tenant or cropper plantations—are geographically concentrated in clusters of southern counties, national enumeration under a single "plantation schedule" covering wage, tenant and cropper operation is unlikely. Cost, at least, is against it. It remains possible, however, to combine multiple-unit and large scale farm tabulations to arrive at a comprehensive statistic of plantation agriculture throughout the United States. The census of 1950 reports 16,911 "multiple-unit farms" with five or more units in the South, 28,350 farms using five or more regular hired workers and 47,199 farms using five or more regular and seasonal workers. (1950 *Census of Agriculture*, Vol. V, part 2, p. 56; Vol. II, chapter IV, p. 250.)

⁹ Brannen, *op. cit.*, p. 9. With free labor in mind, Brannen referred only to tenants and wage-laborers in his definition.

agriculture.¹⁰ That system was founded in Virginia in the early seventeenth century upon the basis of indentured service, a status that was unfree, but certainly not slave.¹¹ Slavery did not become a clearly defined legal status until the eighteenth century. From then on, until freedom came, slaves were the labor mainstay of southern plantation agriculture, and use of wage or share-crop labor was slight.¹²

After emancipation southern planters were obliged to seek another labor system. Denied the right of holding slaves, they turned quickly to these other forms they knew, sharecropping and wage labor. The former came to predominate in cotton within a few years and the latter in sugar and rice.¹³

Under sharecropping the worker lives on a small plot belonging to a landlord, and performs the labor on it necessary to produce a staple crop. He receives remuneration in the form of a share of

the product, usually a half.¹⁴ Although often called a tenant, the sharecropper is more laborer than tenant, because he does not participate in management. Sharecropping had appeared by the end of the eighteenth century, at least on tobacco plantations in Virginia, and was used whether the laborers were the slave property of another person or free.¹⁵ If they were slaves of another, the sharecrop contract did not confer a different labor status on them, but like the "wages" paid in similar situation, served as a convenient way to measure the rental due to the owner for temporary use of the labor power of his property.¹⁶ If the laborers were free, however, sharecropping and wage work represented two distinguishable labor systems, with differing incentives, controls and divisions of the returns.

The superiority of sharecropping over wages from the cotton planters' viewpoint was that it restored in another form much of the control over labor lost through emancipation. The planter retained full powers of directing his laborers at work. They were virtually bound to remain with him for the crop season, and incentive to make a good crop replaced to a degree the loss of disciplinary power over the slave. Besides, in times of low prices, the cropper shared misfortune with the

¹⁰ John Russell, *The Free Negro in Virginia, 1619-1865* (Baltimore: Johns Hopkins Press, 1913), pp. 17-18; Oscar and Mary Handlin, "Origins of the Southern Labor System," *William and Mary Quarterly*, April 1950, pp. 202-203.

¹¹ Existing studies do not reveal how extensively servants were used as laborers on plantations.

¹² Paul S. Taylor, "Plantation Laborer Before the Civil War," *Agricultural History*, January 1954, pp. 1-21; Lewis C. Gray, *History of Agriculture in the Southern United States to 1860* (Washington, D. C.: Carnegie Institute of Washington, 1933), Vol. I, p. 501.

¹³ The "higher percentage of wage labor is due to the nature of the sugar cane and rice industries, which require a concentration of labor in certain seasons of the year, possible only through the use of wage hands, and which, owing to the requirement of considerable capital and superior farm management, do not lend themselves to small-scale tenant farming. The high percentage . . . in wage-labor land for cotton plantations in Louisiana (3 parishes) is believed to be partly due to the influence of the wage system in the adjacent sugar-cane and rice belts." (Brannen, *op. cit.*, p. 21.) La Wanda F. Cox, *Agricultural Labor in the United States, 1865-1900, with Special Reference to the South*, unpublished doctoral dissertation, University of California Library, 1941; Harold Hoffsommer, "Social Aspects of Farm Labor in the South," *Rural Sociology*, December 1938, pp. 435, 438; ———, *The Resident Laborer on the Sugar Cane Farm*, Louisiana Agricultural Experiment Station Bulletin No. 334, November 1941; testimony of Harold Hoffsommer in Hearings before the House select committee to investigate the interstate migration of destitute citizens, 76th Cong., 3rd Sess., pursuant to H. Res. 63 and H. Res. 491, part 2, pp. 457, 465. House select committee hereafter referred to as the Tolan Committee.

¹⁴ "In addition to the land, the owner supplies the equipment, the work stock and their feed, and the seed for planting . . . Variations in the agreements exist, but the half-share system is the more common. Among the variations are the one-third system and the two-fifths system, in which the landowners furnish all of such fertilizers as are used, and the croppers receive a smaller part of the crop. Other variations include sharing of the expense for planting seed, granting the sharecropper all of the corn which he produces on small acreages, and a multitude of variations involving minor crops and occasionally livestock." (Testimony of Ernest J. Holcomb, Hearings before a subcommittee of the Senate committee on education and labor, 76th Cong., 3d Sess., pursuant to S. Res. 266, part 2, Supplementary Hearings on national farm labor problem, 1940, p. 476.) Subcommittee hereafter referred to as the La Follette Committee.

¹⁵ William Tatham, *An Historical and Practical Essay on the Culture and Commerce of Tobacco* (London: Printed for Vernor & Hood, 1800), pp. 99-106.

¹⁶ Gray, *op. cit.*, Vol. II, pp. 667-668.

planters. When good prices were anticipated, planters frequently shifted from sharecropping to wages in order to reap undivided profits.¹⁷

At least four distinct variations of sharecropping have developed: hoe-cropping, patch-cropping, working "through and through," and quasi-share labor.¹⁸ The first three of these represent minor variations in labor contribution, division of the product, or manner of exercising control.¹⁹ The fourth, and most significant, represents a new purpose, to adapt sharecropping to the forces of change represented in mechanization.

Quasi-share labor is a combined wage-and-sharecrop system sometimes used by planters after they have mechanized pre-harvest operations in cotton production. No longer needing many laborers in planting and hoeing, they are unwilling to load their plantations with families in

the old manner and bear the overhead cost of laborers unneeded for most of the year. They try to hold resident on the plantation only the minimum of necessary workers, and use the quasi-share arrangement to do it. The quasi-share laborer receives remuneration in two ways: wages for day labor for the landlord, and in addition either a share of the crop on a small patch, or else the full crop on a patch one-half the size. The size of the crop is insufficient to provide a full living, so the cropper is ready to do additional wage work for the planter at any time.²⁰

This system arose in the new, post-bellum cotton plantation area in Texas, and reached full flower by the 1920's. Planters around Corpus Christi replaced one-man-one-mule-one-row methods of pre-harvest operations of the older plantation belt with one-man-two-horse and two-or-four-row methods. They relied on non-resident seasonal workers for the hand labor at harvest. When tractors and four-row equipment came to the old plantations on the upper delta lands of the Mississippi River in the 1930's, the same quasi-share labor system appeared there. In the newer cotton plantation areas the planters never created a resident "surplus"; in the older areas they

¹⁷ Brannen, *op. cit.*, pp. 22-23. "Heretofore we have advised hiring for money or standing wages—and still think this the best arrangement when labor can be hired at reasonable rates. But under existing circumstances, when labor is high compared with the products of labor, it is better to pay in part of the crop, and thus compel the laborer to share with the landlord the loss from low prices, bad seasons, &c." (Editor's "Thoughts for the Month," *Southern Cultivator*, January 1879, pp. 1-2.)

¹⁸ Quasi-share labor is a descriptive term coined by specialists, but unrecognized in common usage in the southern plantation belt as the other three variations are. However, the labor system it connotes is practiced extensively when certain situations arise, as noted in the text.

¹⁹ Hoe-cropping is usually an adaption to the change in labor power of sharecroppers' families that have lost the main breadwinner. The widow and children, as hoe-croppers, receive only one-fourth of the crop, because they do not provide the labor to work with teams that share-croppers usually perform. Patch-cropping represents a minor variation from customary sharecropping. The ordinary sharecropper, doing all the work on both his own and the landlord's share, receives one-half the crop and wages for any additional work for the landlord. The patch-cropper receives all the crop, doing all the work upon it; the additional half-share is in lieu of wages for pre-harvest work for the landlord. Patch-cropping is most common in west Texas, and has also appeared in Arkansas bottom-lands. (Holcomb, *op. cit.*, pp. 476-477.) Under a contract for working "through and through" all the croppers on the plantation work together in gangs without regard to any individual's crop, instead of each confining his labors to his own allotted field. As Brannen observed in 1924, the system "has practically all of the characteristics of a wage-labor plantation, except in the method of remunerating labor." (Brannen, *op. cit.*, p. 9, n. 10; Hoffsommer, "Farm Labor in the South," p. 436, n. 5.)

²⁰ Holcomb, *op. cit.*, pp. 477-480; Harald Pedersen, "Attitudes Relating to Mechanization and Farm Labor Changes in the Yazoo-Mississippi Delta," *Land Economics*, November 1952, p. 358. Sometimes laborers participating in such an arrangement are expected to accept a lower daily wage for work for the landlord than wage laborers without such a crop interest. The planter desiring to hold a few of the latter on the plantation year-round, may provide them with house, wood and water as free perquisites throughout the year and pay them the higher market wage for all work done in lieu of a crop share. Harvesting is paid for at market rates to all, regardless of status. See Paul S. Taylor, *An American-Mexican Frontier* (Chapel Hill: University of North Carolina Press, 1934), pp. 120-121. The use of subsistence allotments—as distinguished from crop shares—to anchor laborers within range for seasonal work on call is centuries old. The Teutonic Knights from as early as 1305, for example, established wage laborers on gardens to assure a labor supply when needed. See Hermann Aubin, "The Lands East of the Elbe and German Colonisation Eastwards," in J. H. Clapham, et al ed., *Cambridge Economic History of Europe* (Cambridge: University Press, 1941), Vol. I, p. 390.

displaced the laborers who became "surplus" when they mechanized. California cotton growers never adopted the quasi-share labor system. It holds no attraction for moderately skilled, responsible, and fairly well-paid machine operators used to handling costly crawler-type tractors and heavy tillage equipment. In the long view of history quasi-share labor probably is an intermediate labor system, a temporary adaption to hold pre-harvest laborers and useful only in the earlier stages of progressive mechanization.²¹

The entire sharecropper system, indeed, is shrinking fast in the old plantation belt, especially since the mid-1930's. As Ernest Neal and Lewis Jones have expressed it: "The Civil War destroyed the slave-labor system. The tractor and livestock are destroying the share-tenant [and cropper] system." "The small farm units are as much of a hindrance to grazing cattle as to four-row tractors and cotton-dusting airplanes."²² This historic plantation labor system will decline further, the sharecroppers either remaining as wage laborers if there is work for them, or else leaving the land altogether.

The other leading labor system of today, the wage system, was used very little on plantations until the nineteenth century. Wage laborers were free, and free men consistently preferred working on their own farms while these were easy to get, to working for wages. By the middle of the nineteenth century, however, when southern planters still were employing slaves, some northern agricultural employers were able to obtain enough wage workers to conduct enter-

prises fully comparable in size and character to southern plantations. The William Sullivant farm in Ohio, for example, used "fifteen shovel plows and three cultivators, worked by eighteen men and twenty-five horses" in 1854, and a contemporary description says that "twenty-five German girls follow the plow, and do the hoeing, for which they receive 62 1/2 cents per day."²³

Conspicuous examples of plantation agriculture using wage labor, prior to emancipation and outside the South, appeared also in California in the form of great wheat and cattle ranches. These continued after emancipation, multiplied, and were matched in the 1870's by the famous bonanza wheat farms of the Red River Valley of the North and the ranches of the Great Plains. These great wage labor enterprises were recognized as plantations at the time, at least in California. The newspaper *Alta California*, for example, in the midst of a battle over water monopoly in 1886, declared that "when we strike down riparian rights we by the same blow end plantation farming in California, whether the large holdings be used for grain or stock ranging."²⁴

Under the influence of mechanization a special form of wage labor has developed called "migratory." It is seasonal labor, non-resident in the community where it is working. The insufficiency of local workers creates the opportunity and necessity for migrants. Migratory labor is the correlative of quasi-share labor in plantation agriculture, but can

²¹ *Columbus State Journal*, quoted in *Country Gentleman*, August 24, 1854, p. 119.

²¹ Testimony of H. L. Mitchell, Tolan Committee Hearings, part 2, p. 627.

²² Ernest E. Neal and Lewis W. Jones, "Negro Farmer of the South," *Rural Sociology*, March 1950, pp. 36, 37. The number of croppers in the United States rose from 561,000 in 1920 when the census first counted them, to a peak of 776,000 in 1930, then fell by more than one-half to 347,000 in 1950.

²³ Reprinted in *Address of the State Irrigation Committee to the Fresno and Riverside Irrigation Conventions and to the Anti-Riparian Voters of California* (1886), p. 199. For description of large-scale agriculture in northern prairie states see Paul Wallace Gates, "Large-scale Farming in Illinois, 1850 to 1870," *Agricultural History*, January 1932, pp. 14-25; "Land Policy and Tenancy in the Prairie States," *Journal of Economic History*, May 1941, pp. 60-82; "Frontier Landlords and Pioneer Tenants," *Journal Illinois State Historical Society*, June 1945, pp. 143-206.

also exist independently. As the "anchored" quasi-share laborers assure the presence of sufficient laborers during periods of minimum need, so non-resident seasonal workers assure a labor force to meet the maximum need. Unless planters are certain of having sufficient seasonal workers, who will come from a distance if necessary, they are hampered in crop specialization and in carrying on large-scale operations, if not prevented entirely.²⁵

The advantage to the planter was perceived early by a former slave-owner, Dr. A. Oemler, who wrote in 1883:

"The death of slavery was, so to speak, the birth of truck-farming on an extensive scale in the South-Atlantic and Gulf States; indeed it would otherwise have been impossible. I was probably the largest slave-owner, engaged in vegetable culture, in this section; but of forty-five grown negroes, twenty-six only were available as field laborers, the others being mechanics, house-servants, etc.; and at no time could I have controlled more than that number of hands, and few, or none, could have been hired. At the present time there are in the vicinity of Savannah many truck-farmers who employ one hundred to two hundred laborers during the picking season.

"Ex-Governor Hammond's prediction: that the negro, in case of emancipation would 'seek the towns, and rapidly accumulate in groups upon their outskirts,' has certainly been verified. It is the better class of this population, those who are willing to do some work, which supplies the truck-farmer with sufficient labor during the pressing season of gathering his crops."²⁶

Nearly twenty years after Oemler, J. R. Dodge described migratory labor to the U. S. Industrial Commission as it had developed by 1901. He said:

²⁵ "Within the economic characteristics of the population there has been a powerful force towards large scale farming operations. With a continuously abundant labor supply available to meet seasonal and casual needs, the opportunity to specialize in entrepreneurship was relatively great. Individuals with command of large amounts of capital could organize and operate large units, confident that they would be able to get enough extra labor during rush periods. This tendency was accentuated by the presence of individuals with

"The annual inundations of grain fields in harvest time, hop yards in the picking season, fruit picking in districts of extensive market orchards, and similar harvest seasons requiring large numbers of hands for a short time, has a demoralizing effect on farm labor, reducing its efficiency in those lines. Such employments demand little skill; the requirements of each are simple and easily satisfied. They constitute a low order of farm labor, if worthy to be classed with it at all, and are excrescences upon its fair face."²⁷

The use of migratory labor at first spread mainly in fruits and vegetables and wheat. Within a few years the same labor system appeared all the way from the western fringes of the cotton belt to the Pacific Coast. After the first World War, with the spread of cotton westward and the expansion of commercial fruit and vegetable production, it became prevalent along the entire rim of the United States from New Jersey south and west, and northward along the Pacific Coast to the State of Washington. In 1925, the year of an exceptionally heavy cotton crop, Mississippi Delta planters recruited Mexican migrants from north Texas. Since the nineteen thirties migratory labor has been spreading eastward into older plantation areas, especially the bottom lands of the upper Delta.²⁸ Most of the Nation's seasonal

relatively large capital backing." (Varden Fuller, "The Supply of Agricultural Labor as a Factor in the Evolution of Farm Organization in California," in La Follette Committee Hearings, part 54, p. 19881.)

²⁶ A. Oemler, *Truck-farming at the South*, (New York: Orange Judd Company, 1883), p. 8. It is not clear from Oemler's statement whether a full-fledged migratory labor pattern had already appeared here, but at any rate the laborers' permanent tie with the planters had been broken.

²⁷ J. R. Dodge, "American Farm Labor," in Report of the United States Industrial Commission (Washington, D. C.: Government Printing Office, 1901), Vol. XI, p. 79.

²⁸ Dorothea Lange and Paul S. Taylor, *An American Exodus* (New York: Reynal & Hitchcock, 1939). One of the greatest streams of seasonal migration today is from Florida up the Atlantic Coast to Western New York, another is up the Mississippi Valley from Louisiana to Michigan, and a third is from the Southwest to Arizona and California, and northward to Oregon and Washington. (Report of the Tolan Committee, 77th Cong., 1st Sess., H. R. 369, map following p. 741.)

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³⁰ St United (Wash pp. 30 17207

migratory laborers are used by plantation agriculture.²⁹

Seasonal workers became migrants when they could not obtain sufficient employment close to home. To get from place to place where work awaited them, they have walked, used burros and horses, and ridden trains and motor vehicles, in about that historical progression. They travel either as families or singles, and more and more in gangs under the leadership of labor contractors who serve as intermediaries between them and their actual employers. The sources from which the migrants are drawn are not only domestic, but also lie abroad in Puerto Rico, the British West Indies and the central Plateau of Mexico.

While sharecroppers, and slave laborers before them, were rooted to the soil, migrants are usually without connection with it. While sharecroppers and slaves were bound to a single landlord or master by bonds of law, custom, and often by strong feelings of mutual responsibility, the ties between migrants and their employers, who are often numerous within a single season, are impersonal. Responsibility on either side is limited to the brief period of employment. This tenuous connection is reflected in the readiness of migrants to bargain with, and at times to strike against, their employers.³⁰

Completion of mechanization of the last processes—usually the harvesting—that previously required hand laborers ends the seasonal migration of laborers. This happened in wheat in the 1920's

and 1930's, has advanced far in western cotton and sugar beets, and is making substantial progress in fruits and vegetables.³¹

The plantation system shows variety in forms of management as well as of labor. The southern ante-bellum planter was usually a resident on his plantation, using overseers, and selected slaves as drivers to impose his will upon his laborers and guide their hands. Yet frequently he was an absentee; and then agents, overseers, foremen and drivers made up an hierarchy of management. The spread of plantation agriculture to other crops and areas, and in other times has, if anything, increased the use of managers, field men, foremen, and "drivers" or "gang pushers."³²

Absenteeism is spreading in new forms. Plantation agriculture has adopted the device of incorporation. Its operations on, say, the Stockton delta, now may be directed from office buildings in Stockton or San Francisco; its operations in Florida, Minnesota, Illinois or Washington, from Los Angeles or San Francisco.³³ Some of these corporations, capitalized at figures as high as fifteen million dollars, operate not one large tract of land under unified control but perhaps dozens, in states across the land. The control of a single corporation through ownership alone may even extend from planting in California to marketing in Pennsylvania or Maryland, in an integrated operation suggesting the latest industrial trends

²⁹ *Migratory Labor in American Agriculture*, pp. 13 ff.; Paul S. Taylor, "Migratory Labor in the United States," *Monthly Labor Review*, March 1937, pp. 538-539.

³⁰ As Rexford G. Tugwell has pointed out, "Large scale agriculture rapidly extended itself in all one-crop areas throughout the first four decades of the century; and even showed a tendency to establish itself in such mixed farming states as Iowa and Illinois by way of group management under bank or insurance company ownership." See *Puerto Rican Public Papers of R. G. Tugwell, Governor* (San Juan, Puerto Rico: 1945), p. 307.

³¹ "Calpak: The Adventures of Del Monte Brand," *Fortune*, November 1938, pp. 77 ff.; La Follette Committee Hearings, part 62, pp. 22773 ff., 22835 ff.

²⁹ *Migratory Labor in American Agriculture*, Report of the President's Commission on Migratory Labor (1951), p. 7. The Commission reported in 1951 that small and family farms use only a "small proportion" of the Nation's migratory farm workers.

³⁰ Stuart Jamieson, *Labor Unionism in American Agriculture*, United States Bureau of Labor Statistics Bulletin No. 836 (Washington, D. C.: Government Printing Office, 1945), pp. 30 ff.; La Follette Committee Hearings, part 47, pp. 17207 ff.

and inviting occasionally the attentions of officials who enforce the anti-trust laws. This is industrialized agriculture, the modern streamlined plantation system.

An evidence of the link between new and old plantation management is their common, great preoccupation with labor. It is sufficient here to recall the extraordinary measures taken to recruit laborers in every century, the great distances from which these are drawn, the extensive use of intermediaries to obtain them, and the extreme sensitiveness of plantation management to anything in the political arena that touches upon their labor supply.

The newer plantation management generally views interference that seems to threaten its control of labor with hostility whether coming from government or labor unions.³⁴ Its fears are grounded on real problems of operating profitably upon a large labor base. They are derived in part, also, from attitudes that prevailed not only in the historic plantation system but, until the present generation, in many sections of industrial management as well. The attitude is reinforced by the presence, in contemporary agricultural management, of numerous persons whose own cultural heritage is the older plantation system. To say that hostility to interference has grounds that can be explained is not to say it is inevitable. Alongside the solid and even bitter resistance of contemporary Louisiana sugar cane growers and California cotton growers to unionization of field laborers, stands the still almost unique acceptance of collective bargaining by the large Seabrook Farms of New Jersey

and the Fellmere cane-sugar producers and processors association of Florida.³⁵ Whether, and when acceptance of this practice so common in industry will replace attitudes and practices that stem from very old sources is a question for the future.

Ulrich Phillips, in one of his earlier papers, seemed to say that only those crops, five in number, that combine the qualities of ready marketability and steady use of routine labor through most of the year were suited to plantation organization. He included cotton, tobacco, sugar, rice and indigo, and specifically ruled out wheat, dairying and truck crops.³⁶ It now appears that this, and similar older views of the limitations binding plantation agriculture to a few crops or to a few forms are really to be understood as descriptions of the system in the forms that prevailed in the particular place and time which the observer had in mind. Ready marketability surely is an invitation to plantation-scale production of a crop, but the list of five is unduly restricted, as Phillips himself recognized later. An article in *De Bow's Review* saw correctly that a differential in value of product over cost of maintaining labor, not the length of employment, is the planter's criterion for employing more labor. On this basis it argued in 1858

³⁴ "The Cane Mutiny," *Time*, November 2, 1953, p. 26; *Migratory Labor in American Agriculture*, pp. 114-117.

³⁵ "The five great southern staples became plantation staples because each of them permitted long-continued routine work in their production." "In truck-farming, dairying, cereal production, when there are long lay-by intervals to be filled economically with odd jobs, and in most sorts of frontier industry, there are positive requirements of versatility and reliability on the part of the laborers; and in these cases no amount of knowledge and will-power on the part of a large-scale employer can make up for a deficiency in the necessary qualities on the part of his employees. Therefore the plantation system, with its crude type of labor, was clearly debarred from these enterprises." See Ulrich Phillips, "The Decadence of the Plantation System," *Annals of the American Academy of Political and Social Science*, January 1910, pp. 38-39.

³⁴ Testimony of Paul S. Taylor, La Follette Committee Hearings, part 47, pp. 17218-9.

that slave labor was adapted to wheat farming in the mid-west.³⁷

Wheat and other cereals were on Phillips's original list of crops unsuited to plantation agriculture, as having too short a season of labor. Yet even within the traditional southern plantation area during the slave era, some plantations concentrated on wheat and corn production.³⁸ Wheat and corn were readily marketable. Even mixed husbandry was practiced successfully by some planters.³⁹ The Carroll plantation in Texas was hailed in 1858 as the largest in the United States, dividing its production between 300 bales of cotton, 20,000 bushels of corn, 1,000 head of horses and mules,

1,000 cattle and 600 hogs.⁴⁰ Although Ulrich Phillips regarded such plantations as "exceptional" within the South, he implied recognition that wheat was suited to plantation agriculture in a comparison he made later with the huge wheat ranches of California.⁴¹

In the North the Narragansett planters of Rhode Island were large stock farmers and diarmen in the late seventeenth and eighteenth centuries. Their slaveholdings ranged in number from about five to forty each, and these were supplemented by use of indentured servants and unfree Indians. The use of slaves doubtless contributed to the planters' advantage in operating on a large scale, just as it did in the South.⁴² After slavery, in the late nineteenth century, large western cattle ranches showed their plantation character plainly in the elaborate rules governing cowboys. These invite comparison with the instructions ante-bellum planters wrote to their over-

³⁷ "The lands in the western country, of which the black prairie lands of Indiana and Illinois are a fair type, are capable of producing annually from twenty to fifty bushels of wheat to the acre . . . The continuous system of labor, which is essential to the tillage of the Southern staples, not being demanded in the production of wheat, it follows . . . that one man in the Western States is capable of producing one-thousand bushels of wheat per annum . . . It has been objected that, for a large season of the year, a negro North would not be employed . . . it is a matter of no possible moment, whether the slave is employed the whole or a part of the year. He does not consume any more while idle than when at work, and the great fact remains, that he can clear \$800 per annum . . . It has been seen that, with negroes at even their present prices, it would be profitable to employ them on the grain farms of the West." ("African Slavery Adapted to the North and Northwest," *De Bow's Review*, 1858, Vol. XXV, pp. 387, 388, 392. Italics in original.) The article expressed doubt, moreover, that there was any season when additional work could not be turned "to profitable account."

³⁸ Edmund Ruffin of Virginia was among the wheat planters, using "very nearly" his entire force of 26 farm hands and 5 house servants in the harvest. (Edmund Ruffin, "Management of Wheat Harvest," *American Farmer*, June 1851, p. 459). The Carter plantation of Virginia was producing above 8,000 bushels of wheat in 1861. In North Carolina the Collins and Pettigrew plantations turned from rice to corn production for market. See Ulrich Phillips, *Life and Labor in the Old South* (Boston: Little, Brown, and Company, 1929), pp. 231, 252-253; Bennett H. Wall, *Ebenezer Pettigrew, An Economic Study of an Ante-Bellum Planter*, unpublished doctoral dissertation, University of North Carolina: 1948.

³⁹ The Sampson plantation of Virginia turned from tobacco to grain, hay, cattle and hogs, and the Phillips plantation in Mississippi raised cotton, corn, hogs, cattle, sheep, small grains and melons. (Phillips, *Life and Labor*, pp. 287, 288, 309; Gray, *op. cit.*, Vol. II, p. 781.) See Oemer's reference to large-scale truck-farming, *supra*; also footnote 26.

⁴⁰ *Country Gentleman*, 1858, Vol. XII, p. 77.

⁴¹ "There are no tales told in the South," he wrote, "to compare with the California tradition of wheat ranches so vast that plowmen, carrying their lunches, turned each a single furrow for his morning's work and plowed homeward through the afternoon; but the scales of Edward Lloyd in Maryland, Philip St. George Cocke in Virginia and the Burgwyns in North Carolina were a challenge to the wheat growers of any region in their day." See Phillips, *Life and Labor*, pp. 127, 138.

⁴² Edward Channing, *The Narragansett Planters* (Baltimore: John Hopkins Press, 1886), p. 10; William Miller, *The Narragansett Planters* (Worcester: American Antiquarian Society, 1934), p. 23, reprinted from *Proceedings of the American Antiquarian Society*, April, 1933. Carl Raymond Woodward says that the "farms" of the "country gentlemen" of colonial New Jersey operating "large estates" with both slaves and indentured servants "were commonly called 'plantations' after the style of the southern colonies." See *Ploughs and Politics* (New Brunswick, New Jersey: Rutgers University Press, 1941), p. 229. New Jersey Archives contain frequent references in the eighteenth century to "plantations," meaning usually large agricultural enterprises. The line between the terms plantation and farm was not very sharp; e.g., the *American Weekly Mercury*, January 10-17, 1726-7, referred to sale of a "Farm or Plantation . . . containing about One Hundred and Seventy acres . . ." See William Nelson, ed., *Documents Relating to the Colonial History of the State of New Jersey* (Patterson: Press Printing & Publishing Co., 1894), Vol. XI, part II, p. 116. Description of a "plantation" of 1600 acres along the Hudson River in late eighteenth century appears in Harry J. Carman, ed., *American Husbandry* (New York: Columbia University Press, 1939), pp. 79-84.

seers. The manager of a huge ranch in the Texas Panhandle, for example, posted "General Rules of the XIT Ranch" in 1888 containing 23 paragraphs covering everything from filling out hiring forms to a threat of discharge of any employee altering or tearing down the printed rules.⁴³ In the same vicinity in 1883, over 300 cowboys struck for twelve days for higher wages against about a half-dozen ranches.⁴⁴ Nothing could indicate more clearly the sharp separation between management and labor, characteristic of plantation agriculture in all periods and forms.⁴⁵

Southern ante-bellum planters saw no necessary limitation of the plantation system to the five leading southern staple crops, or even to the South. Senator Jefferson Davis, for example, a Mississippi planter, thought that "climate, productions, soil" and cultivation by irrigation in California required "associated labor," preferably in the form of slavery.⁴⁶ At about the same time the *California Farmer*, without insisting on slavery, also saw the possibilities for

plantation agriculture there. In 1854 it declared: "California is destined to become a large grower of Cotton, Rice, Tobacco, Sugar, Tea, and Coffee . . . Americans will not become the working men of our tule land, in our Rice fields and our Cotton plantations and other departments of the same kind of labor . . . Then where shall the laborers be found? The Chinese! And everything tends to this—those great walls of China are to be broken down and that population, educated, schooled and drilled in the cultivation of these products, are (sic) to be to California what the African has been to the South. This is the decree of the Almighty, and man cannot stop it."⁴⁷

L. C. Gray has placed the issue—what conditions favor plantation agriculture—in a true light. He did not divide either crops or regions neatly between those adapted, and those unadapted to plantation farming, even to that form of it resting on slave labor. He said that the profitability of the system was relative, not absolute. Although Gray does not say so specifically, he implies that a larger supply of slaves would have reduced the price per head and enlarged the scope of their profitable employment for plantation agriculture.⁴⁸ The spread

⁴³ J. Evetts Haley, *The XIT Ranch of Texas* (Chicago: Lakeside Press, 1929), pp. 247-250.

⁴⁴ Ruth Allen, *Chapters in the History of Organized Labor in Texas* (Austin: University of Texas Publication No. 4143, 1941), pp. 35-41.

⁴⁵ The present paper does not give the consideration to one form of large-scale agriculture under single control that is logically due it, viz., the economically communal societies established during the nineteenth century, usually under religious or idealistic but secular motivations. Two principal survivors among these are the Hutterite communities that practice economic communism while operating large scale agriculture under theocratic leadership, and the Amana society. The latter changed from economic communism to a form of cooperative ownership in 1932, and operates its 26,000 acres under "business" direction. See Lee Deets, *The Hutterites: a Study of Social Cohesion* (Gettysburg, Pennsylvania: Printed by the Times and News Publishing Co., 1939); Donald Drew Egbert and Stow Persons, *Socialism and American Life* (Princeton: Princeton University Press, 1952), Vol. 2, pp. 94 ff.

⁴⁶ Paul S. Taylor, "Foundations of California Rural Society," *California Historical Quarterly*, September 1945, p. 200. With other southerners Davis argued for slavery in the new state to be admitted in 1850, in order to promote agriculture there, and even to develop the mines. The plantation system was essential to create irrigated agriculture, he said, because "no pioneer can reclaim the soil from Nature; an individual pioneer cannot settle upon it with his family, and support them by the product of his own exertion . . ."

⁴⁷ *California Farmer*, May 25, 1854, p. 164. Fears that this system of large-scale slave labor operations "under the direction of capitalists" would produce "monopoly of the worst character" animated those who argued successfully in California for its admission to the Union as a free State. See Fuller, *op. cit.*, in La Follette Committee Hearings, part 54, pp. 19792 ff.

⁴⁸ "The newer regions were able to capitalize slave labor so high that in the regions of earlier settlement it could not earn interest at the market rate on these higher capital values. It was in this sense that the employment of slave labor in general farming was frequently unprofitable. In the same sense, it was unprofitable when employed in the production of cotton in some of the older cotton producing regions. It could not produce a surplus sufficiently large to pay interest on the high capital values made possible by competition of regions where slave labor was employed to better advantage. Nevertheless, slave labor of the older regions—probably even in Colonial New England—was able to earn a surplus above cost of maintenance, and had it not been for the competition of the new lands of the West, it would have continued profitable in the older regions as long as it was possible to average something above cost of subsistence." (Gray, *op. cit.*, Vol. I, pp. 477-478.)

of plantation agriculture since emancipation, with labor overhead reduced by short season employment of free workers, seems to provide corroboration that the institution has wide flexibility and adaptability.

Plantation agriculture has proved as variable with respect to the races and nationalities it employs as in forms of labor and management, and crops. The classic plantation laborer was the African and his descendants. Until late in the seventeenth century, however, this was not so; most plantations along the Atlantic seaboard used European whites, largely from the British Isles or Germanic parts of the Continent, and some American Indians. After the Civil War, southern whites gradually began to enter the plantation system of the South from which slavery had excluded them, mainly as tenants and sharecroppers. A few Chinese were introduced from California into the plantation areas of the Mississippi Valley south of Memphis. Later in the nineteenth, and in the early twentieth centuries, small groups of immigrants from southern and eastern Europeans, mainly Italians, appeared on plantations in Arkansas, Louisiana and Texas. In the greater Southwest the spread of irrigation, mainly after 1912, was marked by plantation farming using Mexicans, southwestern whites, Negroes, and some American Indians.

On the Pacific Coast a different set of nationalities was used in the nineteenth and twentieth centuries. After visiting the Sacramento delta in 1924, Ulrich Phillips returned East that winter to tell our societies in a meeting at Richmond, Virginia, that he had seen plantations in California. In his paper entitled "Plantations With Slave Labor and Free," he said: "A hoe-gang in which I counted thirty-nine laborers, working straight abreast, each upon a furrow a measured

mile in length, comprised not negroes, but Hindus, Sicilians, Mexicans, and men of yet other stocks."⁴⁹ He might well have added Oriental laborers from China, Japan, the Philippines, and occasionally from Korea. In the twentieth century, large-scale enterprises on the Pacific Coast have used small numbers of immigrants from southern and eastern Europe. Since the 1920's and 1930's especially, southwestern whites have been numerous. After World War II the number of Negroes, a few of them present since the eighteen seventies, was greatly augmented. These are examples, not a full catalog of the diversity of race and nationality employed as plantation laborers.

Plantation operators, as in the colonial beginnings, are almost entirely whites of European stock.

The essence of plantation agriculture, as pointed out earlier, is the unified control of a large tract of land for agricultural production. The four elements used for this purpose for over three centuries have been land, labor, capital, and management, combined in varying proportions and forms. In the beginning land was free, or nearly so. The planter mobilized capital and labor to make a piece of land productive. He invested his

⁴⁹ Ulrich Phillips, "Plantations with Slave Labor and Free," *American Historical Review*, July 1925, p. 738. Everett E. Edwards wrote in 1938: "...there are many suggestions of the plantation system in the large-scale farming operations on the Great Plains, in the Rocky Mountain region, and on the Pacific Coast. Except for the labor turnover and lack of domesticity, the sugar-beet ranch of the Sacramento Valley, for example, is essentially a plantation." See, *The Southern Plantation: a Consideration of Its Nature and Persistence as an Agricultural Unit*, paper prepared by Everett E. Edwards for presentation at the session on Plantation Management of the fourth annual meeting of the Southern Historical Association, New Orleans, Louisiana, November 3, 1938. Typed copies on file, History Section, United States Agricultural Marketing Service, Washington, D. C., and Giannini Library, Berkeley, California. Apparently Phillips and I agree that "labor turnover and lack of domesticity" do not disqualify western large-scale agriculture based on the labor of migratory single men for the label "plantation," albeit a variant from the classic southern form. Whether Edwards, using the word "except," would disagree, is questionable; the reader can decide.

capital in labor; the laborer was capital. Today the owner of capital does not own the laborer, but pays currently for his services, and invests capital in machinery in order to diminish his need for labor.⁵⁰

As capital investment brings machinery onto the land, laborers move off. The status of those who remain improves. Incentives tend to replace disciplines. Living standards rise. The fate of those who leave depends not so much upon agriculture as upon the capacity of industry to employ them. During the process of mechanizing, a fringe of migratory workers lives in precarious relation to agriculture until the process is finally completed in the course of decades or generations.

Management, starting with the simple structure of the planter and his overseer or "drivers," occasionally developed into an elaborate hierarchy even under slavery. Today it has attained the complex forms and myriad methods of the modern industrial corporation.

A large tract of land is still part of modern plantation agriculture. Land is no longer free, it has become expensive. Capital is invested heavily in land ownership, or as alternative, in leasing. Singleness of control survives, and grows into control of many large tracts, some of them separated by as much as 3,000 miles.

⁵⁰ "Large-scale farms, less than 2 percent of all farms, contained more than one-fourth of all farm acreage and more than one-tenth of all crop land; these large-scale farms had one-sixth of all farm capital, one-twentieth of the total labor resources, and produced more than one-fifth of the value of all farm products sold and used, and nearly one-fourth of all farm products sold." See Arthur F. Raper, *A Graphic Presentation of Rural Trends* (United States Extension Service and Bureau of Agricultural Economics, 1952), p. 13. Reuben Hecht and Glen Barton, *Gains in Productivity of Farm Labor*, United States Department of Agriculture Technical Bulletin No. 1020, (Washington, D. C.: Government Printing Office, 1950).

Plantation agriculture competes with its opposite, the family farm, as it always has done. Competition is not only for use of the better land, but also in the subtler form of absorption of the functions of the farmer by the planter, until one becomes the shadow, and the other the substance. The "planter" who absorbs the "farmer" may be a man, a corporation, or a cooperative association to which the farmer belongs as a member. This process of absorption has gone far in, for example, the production of citrus fruit.⁵¹

The family farm, like the plantation, has been investing capital in machinery ever since it became available. In so doing, it too replaces workers on the land, both farm families and wage workers. Today the trend of the family farm institution, under the incentive to keep costs down by using machinery as fully as possible, is toward larger tracts of land, with sometimes less and sometimes more labor. The trend of the plantation is toward more elaborate management, and machinery, and less labor. At points these trends appear to touch. Whether they will ever merge is beyond the range of easy prediction.

⁵¹ What began as an organization for performance of commercial, processing and marketing functions only, has frequently assumed functions originally performed by growers by offering more and more services to them. One after another, citrus packing houses, cooperative as well as commercial, have assumed responsibility for recruiting and housing labor, picking the crop, fumigating, irrigating and cultivating. In Florida resident caretakers, who began by tending the groves of absentees, ended by becoming proprietors and processors. In southern California, even resident citrus growers have been surrendering more and more of their functions as agriculturists to their packing house or association, doing little beyond live in their groves and receive the proceeds from the crop. Growers who are members of voluntary associations can and do exercise their right to resume their "farmer" functions, when they so desire. See testimony of Paul S. Taylor, La Follette Committee Hearings, part 47, pp. 17223-4; also J. E. Coit, an "Economic Brief" submitted in the *North Whittier Heights Citrus Association vs. National Labor Relations Board* case No. 8819, United States Circuit Court of Appeals for the Ninth Circuit, Transcript of Record, Vol. II.

Rural Zoning in Minnesota: An Appraisal[†]

By CARL H. STOLTENBERG*

RURAL zoning was first tried some 21 years ago in the farm-forest fringe areas of the Lake States. It was tried as an answer to a pressing problem of the time: to provide for orderly development of rural areas without unduly increasing the costs of local government.

In the years since World War II there has been little interest in rural zoning. The reasons for this are that rural populations in marginal farming areas have been decreasing, and high prices for farm products have brought about a prosperity that has eased the financial burdens of local governments.

But the problems that brought about the need for rural zoning have not been eliminated. When rural populations are low and local governments are not bankrupt, adjustments of zoning programs may yield excellent results. This then is a good time to evaluate the accomplishments of rural zoning and to modify or expand present land-use programs on the basis of this appraisal.

This study deals specifically with the results of rural zoning in the 14 northeastern counties of Minnesota, a group of counties within which land-use and local government problems are relatively homogeneous. This group includes all counties of the state which have seriously considered rural zoning.

Conditions Leading to Zoning

During the latter part of the nineteenth and early twentieth centuries, lumbering

was the major activity in northeastern Minnesota. The lumber industry and the lure of low-priced land brought thousands of settlers from the East. The region's population rose almost 500 percent from 1880 to 1890, 130 percent from 1890 to 1900, 86 percent from 1900 to 1910, and 30 percent from 1910 to 1920. As the sawmills and the lumber industry moved westward these immigrants remained and farmed in isolated clearings scattered throughout the region.

Country and township governments were established; school districts were organized; swamp-drainage projects were undertaken; and schools and roads were constructed; all under the assumption that the region's population would continue its rapid expansion.

Together with the realization of the low productivity of much of the land for agricultural crops, the agricultural depression of the early 1920's brought an abrupt halt to the region's population expansion. The region's total population increased by less than one percent from 1920 to 1930. Local people were left with heavy debts for over-built road and school facilities; with costly and inappropriate local governments; with educational systems which were costly on a per-student basis due to low enrollments and long transportation distances; with high per-capita costs for road maintenance due to the scattered pattern of settlement; with millions of acres of practically denuded and hence unproductive forest land; and with low prices for the few agricultural products being grown. As the land lost its speculative value, vast acreages became tax delinquent, leaving for the remaining taxpayers the already-excessive costs of maintaining public services. In turn this encouraged another

[†] A more comprehensive report of the results of this study is to be found in *Progress in Rural Zoning in Northeastern Minnesota*, a dissertation submitted to the Graduate School of the University of Minnesota by the author in partial fulfillment of the requirements for the degree of Doctor of Philosophy, 1952.

* Former Instructor in Forestry, University of Minnesota; now Assistant Professor of Forest Economics, Duke University.

cycle of increased delinquency. Conditions became steadily worse until well into the 1930's.

The industrial depression of the 1930's added to the region's difficulties not only by causing greater declines in farm prices and incomes but also by stimulating a "back-to-the-land" movement on the part of unemployed industrial laborers. Contrasted with the 0.2 percent increase in population during the 1920's, the region's population increased by ten percent during the 1930's. Most of these new residents were temporary "farmers" who had little farming ability. They settled in isolated localities consequently causing increased drains on the region's economy for schools, roads and relief but contributing little if any to the financing of these services.

These were the conditions under which zoning was inaugurated in Minnesota and the other Lake States. The objectives of zoning were primarily to so direct new settlement that the increased costs brought about by such settlement would be kept at a reasonable level, and at the same time settlers would be directed to the areas in which their chances for successful farming would be maximized.

Minnesota's Zoning Ordinances. Minnesota's state enabling act¹ was passed in 1939 following the lead of neighboring Wisconsin (1929) and Michigan (1935). The enabling act authorizes boards of county commissioners in forested counties "in conjunction with town boards to establish districts and to regulate the use or occupancy of lands within these districts."

Minnesota's zoning ordinances differ in one important respect from the more common Wisconsin-type ordinances. Minnesota's ordinances provide only for "restricted" and "unrestricted" districts.

Year-around residence is prohibited in the restricted district but all other uses of the land are permitted in either district. The Wisconsin ordinances in general provide for forestry, recreation, and unrestricted districts.² Only certain specific uses of the land are permitted in the forestry and recreation districts. Timber and wild agricultural crops are the only products which may be grown and harvested in the forestry district. Permitted uses in the recreation district are comparable, although year-around residence required to maintain recreational facilities is permitted in this district but prohibited in the forestry district. All uses are permitted in the unrestricted district. Thus Minnesota's ordinances are unique in that they separate occupancy from specifically land-use restrictions.

Another important characteristic of zoning in Minnesota is the combined authority of town and county boards. Either board can prevent a restricted classification of any land within its jurisdiction. But no town may zone without the approval of the county board. In Wisconsin, towns have zoning authority if the county has refused to zone.

Zoning Procedure. Studies of land-use problems within the counties of the region were made by committees of local citizens prior to the passage of the state zoning act. After careful study these committees concluded that an unsatisfactory pattern of land use was one of the underlying causes of their difficulties—the same basic problem indicated by the earlier studies of the Governor's Committee,³ Jesness and Nowell,⁴ and others.

² For a more complete description of zoning in Wisconsin see W. A. Rowlands, F. B. Trenk, and R. Penn, *Rural Zoning in Wisconsin*, Wisconsin Agricultural Experiment Station Bulletin 479, Madison, 1948.

³ Governor's Committee on Land Utilization, *Land Utilization in Minnesota: A State Program for Cutover Lands* (Minneapolis: 1934).

⁴ O. B. Jesness and R. I. Nowell, *A Program for Land Use in Northern Minnesota* (Minneapolis: University of Minnesota Press, 1935).

¹ *Minnesota Laws, 1939, c 340.*

As a result a citizen committee in each township, with the assistance of one or more members of the state land-use planning staff⁵ and the county agent, classified the rural land in their town according to its best use under existing conditions of land quality and location with reference to schools, roads, and markets. This classification on the basis of the experience and opinions of local farmers was thought to be quicker, much less costly, more easily understood, and more readily accepted by local people than a detailed soil survey. The classification of all land in the fourteen-county region was completed except for Pine County, where classification was abandoned prior to completion.

This planning and classification work prepared a good foundation for zoning. In turn, zoning offered local people an opportunity to enforce legally the previously recommended land-use classifications. During the first four years a member of the state land-use planning staff was available to assist in the preparation of a zoning ordinance when requested by a board of county commissioners. With this technical assistance town boards met with interested local citizens and reclassified all land in their town as either restricted or unrestricted. Land classified as restricted was that from which new settlement would not only be discouraged but would be legally excluded.

Following the town-board classifications, zoning procedure calls for the county board to combine the results into a proposed zoning ordinance, making whatever changes seem wise only after receiving the approval of the town boards

concerned. Public hearings are then held and final revisions made before the county board of commissioners actually votes on the proposed ordinance. Following favorable board action each ordinance is published and filed with the register of deeds. Usually a zoning map has been prepared to show the location of the districts described in the ordinance.

Present Status of Zoning

Since enabling legislation was provided before the final completion of any of the land-use studies, several counties adopted zoning ordinances almost immediately. Carlton, Koochiching, and Lake of the Woods Counties passed zoning ordinances in the summer of 1940. Beltrami County followed suit in 1941. By the summer of 1946, Itasca, St. Louis, Aitkin, and Clearwater Counties were zoned. No ordinance has been passed in the eight years since 1946. The following sections will deal primarily with zoning accomplishments in these eight counties.

Adequacy of Restricted Districts. Although no absolute measure of the adequacy of the restricted districts is available, several criteria may be used to give some indication of the suitability of the areas delimited. A summary of several criteria is presented in Table I, where the area of land presently available for settlement (the unrestricted district) is compared with several measures which might indicate the probable area of land needed for settlement. Caution should be used in drawing conclusions as to the quality of zoning accomplished in any given county on the basis of any single comparison. For example, if two counties have similar proportions of land in farms yet dissimilar proportions of land restricted, it does not follow that the county with the smaller proportion of land restricted has done a

⁵ Federal and state funds cooperatively supported a small land-use planning staff in Minnesota from 1937 to 1942. Mr. A. D. Wilson, local farmer, former director of the Minnesota Agricultural Extension Service, and former director of the Beltrami Island Resettlement Project, directed the activities of the planning staff in this region and personally assisted most of the local committees in their studies.

TABLE I—ESTIMATES OF LAND SUITABLE FOR AGRICULTURAL USE IN THE ZONED COUNTIES

County	Total Area ¹	Local Committees' Classification "Farm Land" ²	Zoning Classification "Unrestricted"	Jesness and Nowell 1935 Classification "Agricultural"	Land in Farms 1950 ³
	<i>acres</i>		<i>percent of total</i>	<i>county acreage</i>	
Aitkin.....	1,167,360	43	59	45	27
Beltrami.....	1,610,880	35	56	39	21
Carlton.....	550,400	60	76	70	43
Clearwater.....	643,200	48	78	50	43
Itasca.....	1,704,320	26	29	26	15
Koochiching.....	2,002,560	19	30	23	9
Lake of the Woods....	837,120	30	49	26	21
St. Louis.....	4,019,840	23	22	26	13
Total of 8 Counties....	12,535,680	29	39	32	18

¹ Acreages from U. S. Bureau of Census, 1940 Census of Minnesota, Population.

² Includes all land classified as "Suitable for Farming" and half of land of "Questionable Value for Farming." Acreages from county land-use reports. Classification includes over 97 percent of each county's land area with two exceptions: 605,447 acres (38%) of Beltrami County and 123,038 acres (19%) of Clearwater County are located in the Red Lake Indian Reservation and are unclassified.

³ Acreages from U. S. Bureau of Census, 1950 Agricultural Census of Minnesota.

more "conservative" job of zoning—the existing settlement pattern there might have been more scattered, making the restricting of broad areas much less feasible.

Almost all year-around rural residents of the region are engaged in farming. Resort owners usually live elsewhere during the winter. Thus a more than adequate allowance for agricultural expansion would seem to be indicated by an unrestricted district which allows for more than doubling the area now in farms. This seems particularly liberal in the light of the recent settlement trends indicated in Table II.

A similar conclusion is drawn from the fact that in six of the eight counties only two-thirds of the land area classified by local citizens as being unsuited for farm development was placed in the restricted district. This allowance seems

TABLE II—AGRICULTURAL DEVELOPMENT IN 14 COUNTIES OF NORTHEASTERN MINNESOTA: 1880-1950¹

Census of	Number of Farms	Percentage of Land in Farms	Percentage of Land "Improved"
1880	378	.3	.1
1890	1,829	1.4	.3
1900	7,550	5.3	1.0
1910	14,275	10.2	2.2
1920	22,380	15.1	4.2
1925	29,446	17.2	4.6
1930	25,994	16.3	4.9
1935	34,040	20.2	6.7
1940	33,601	19.2	7.2 ²
1945	29,155	19.5	6.9
1950	24,579	19.4	6.9

¹ U. S. Bureau of Census data.

² Census definition of "Improved Land" changed between 1940 and 1945 so these data are not exactly comparable.

somewhat excessive since even the land originally classified as suitable for immediate development into farms would take care of all settlement until the year

2000 if such settlement occurred at a rate equal to that which developed during the past fifty years.

In 1935 Jesness and Nowell recommended the establishment of specified zoning districts in their study, *A Program for Land Use In Northern Minnesota*. A comparison by counties is generally logical here since both classifications were made on the basis of existing settlement patterns which changed little during the period involved. If the Red Lake Indian Reservation were excluded from the unrestricted districts, as was done in the Jesness and Nowell "agricultural" classification, the proportion of unrestricted land in Beltrami and Clearwater Counties would be 39 and 59 percent respectively. (Placing these lands in the restricted district has certain advantages but for purposes of comparison this difference is of minor importance.) With this adjustment, a very close agreement is found between the proposed and actual gross acreages unrestricted in four of the counties. Between 1935 and the time of actual zoning certain local developments doubtless would have called for minor changes in the proposed ordinances but it would seem that the net effect of these developments generally would have called for a net increase in the total area restricted rather than a decrease.

Thus from a long-run viewpoint it appears that in some towns and counties more land should have been logically included in the restricted district, while in others the total land area restricted may be adequate.

Pattern of Zoning Developed. While gross area of the restricted district is one determinant of the effectiveness of a zoning ordinance, the settlement pattern defined by the zoning districts is an even more important determinant. Zoning must restrict settlement from the right areas if it is to achieve its objectives.

An examination of the zoning pattern clearly indicates that the primary objective of zoning in some counties was the prevention of isolated settlement with its consequent high cost to local governments. In St. Louis County, for example, the unrestricted areas generally are found in large blocks and in narrow bands along most of the improved highways. Such a pattern will not eliminate long transportation distances to schools or towns, but traveling will be done on good roads which are maintained the year around. This type of ordinance is practical and has much to recommend it. Administration should be relatively simple and strong local support for such an ordinance should be readily obtained. It does not closely direct all settlement to productive agricultural land, but it assists such direction.

In order to simplify zoning administration and maximize concentrated settlement, districts should be as large and as simple as possible. Zoning is most effective when tracts of several thousand acres can be blocked into either a restricted or an unrestricted district. Such a pattern has not been developed in Minnesota. Zoning in southern Beltrami County is an example of greater stress being placed on directing settlement away from relatively small tracts of unproductive land. Due to the actual restricted district being made up of many small, scattered blocks, the present ordinance requires the administration of 840 miles of boundary-line between restricted and unrestricted districts. Jesness and Nowell's restricted district contained approximately the same area in three large blocks but would have resulted in only 150 miles of such line.

Minnesota's zoning laws actually encourage the development of small, isolated-block zoning. Since zoning districts are originally delineated by individual

township boards, the result is actually township zoning. Although this has some desirable aspects it also prevents the development of an ideal ordinance. Each town board restricts the poorer land in that township and leaves the better land unrestricted. The result is some land placed in each district in almost every township, while if a county or regional scale of productivity were used perhaps many whole townships would remain open for settlement and others would be completely restricted.

"Township zoning" may weaken an otherwise sound county ordinance when some of the town boards refuse to restrict land under their jurisdiction. Beltrami County's ordinance shows 100 percent participation by the various town boards. On the other hand, no restricted areas were defined in seven of the twenty-four townships in Carlton County. Four of these townships have some of Carlton County's largest areas of land unsuited to settlement.

However, "township zoning" also has certain advantages when contrasted with county zoning. Anti-zoning town-board officials may be sufficiently influential to prevent all zoning if their town must be included. Lake County prepared a zoning ordinance which was accepted by all town boards except two. But lacking 100-percent township participation the board of county commissioners refused to approve the ordinance.

The status of land ownership has greatly affected the zoning classification applied. Publicly-owned land has encouraged a restricted classification while private ownership has had the opposite effect. Carlton County's ordinance typifies this tendency in that only approximately sixteen percent of the land in the restricted district is in private ownership.

Town boards were usually very hesitant to restrict land which was currently

being used as a residence, even though such a classification had no effect on the present owner as long as the residence was maintained. Zoning makes only new settlement in the restricted district illegal. Existing residences remain legal until occupancy is terminated for a period of two or more years. Misunderstanding of this fact has also brought opposition from the residents concerned.

Ordinance Administration. Zoning-ordinance administration consists primarily of keeping track of non-conforming uses and their discontinuance, enforcing the regulations, and adjusting ordinance provisions to changing basic conditions.

Since counties which need zoning usually cannot afford an extensive administrative organization, care should be taken to simplify the administrative task wherever possible. The chopped-up pattern of the present restricted districts has made efficient administration more difficult. However the residence-type restrictions make violations relatively simple to detect. And by relocating residents from the restricted district at least two counties have made it simpler to keep track of these legally isolated settlers. These latter factors have eased administrative difficulties.

If the vast majority of local citizens clearly understood and supported the zoning ordinances, they could bring about effective administration even when other factors were unfavorable. It is a present lack of this understanding and support which is largely responsible for current administration weaknesses. The common misconception that any population growth will result in economic growth and progress is rather widespread in the region. Public officials and others often tend to look upon new residents as new taxpayers, ignoring the fact that they may require much more public assistance than they contribute in taxes.

For this reason enforcement has met considerable public resistance when it appears to be inhibiting local immigration.

As a result, administration is likely the weakest part of the zoning program in Minnesota. The first phase of administration, that of keeping a record of legal non-conforming residences and their discontinuance, has largely been ignored despite its being legally required. Only three of the eight counties prepared such a list originally and only one of these is keeping the list up-to-date. During the 1940-1950 decade the number of farms in the region decreased by 27 percent. If no record is kept of the residences abandoned in the restricted district, resettlement may someday occur and an excellent opportunity to improve the effectiveness of the ordinance will have been lost.

The reason for not keeping a non-conforming-use list is simply lack of time and cooperation. In no case has there been an addition to the county staff specifically for administration of the zoning ordinance. Responsibility for administration has been assigned to county officials in addition to their existing duties. Some have sought cooperation from local tax assessors and others in preparing and maintaining the list, and where this was not forthcoming the task has not been accomplished.

Little evidence is available as to the adequacy of the most obvious phase of administration, that of actually enforcing the residency regulations. Intensive enforcement efforts have not been needed during the years since the ordinances were established because little settlement has taken place.

In some counties responsibility for enforcement has been assigned to the land commissioner. In at least one county the auditor is responsible. And in others

enforcement is considered to be the job of all county officers. The weakness of the latter system is obvious. If the county has a land commissioner he is the logical choice since he often spends a large share of his time in the non-agricultural areas of the county.

Although direct contacts have resulted in the discontinuation of some illegal residences, several county boards have been willing to relax enforcement in the establishment of some such residences. This has been true especially when the settlers are associated with the recreation industry. Attempts to expand the industry to undeveloped areas have been encouraged by county officials, not infrequently at a considerable cost to local taxpayers. In some cases the settlers have been allowed to stay illegally in the restricted district after having been warned that such public services as road construction and maintenance, school bus service, etc., would not be furnished them in that location.

Enforcement at the present time requires only little effort, but enforcement machinery must be operating and be capable of considerable expansion when greater need for it arises. In at least four of the zoned counties it is very doubtful that the present arrangements for enforcement are adequate to form even a minimum framework within which to build an efficient enforcement system.

Adequate zoning administration must also be concerned with adjusting the zoning ordinance to changing conditions. Amendments are possible upon approval of the town and county boards concerned. Basic conditions affecting land use do change, including people's understanding of these conditions. Rural zoning must be kept abreast of these changes or trends if it is to perform its function well. However, distinction must be made between what are merely short-

run changes or whims and what are the basic long-run changes in conditions and public opinion. To yield to requested amendments for short-run reasons will weaken an ordinance, even as failure to provide amendments to keep in line with basic changes will render an ordinance ineffective in achieving its objectives.

Amendments have been made to six of the eight ordinances. Each amendment has been to remove land from the restricted district and have it placed in the unrestricted district. This, in the light of the large decrease in the number of farms in the region, would seem to indicate that the net changes that have been made are not in the direction of fundamental, long-run changes in conditions affecting land use. Doubtless many of these changes were justified and resulted in both private and public benefit. However, it would seem logical that even larger areas would have been transferred to the restricted districts had the public interest been as well represented as individual interests in pressure to have amendments made to keep abreast of changing conditions.

Results of Zoning

An analysis of the actual benefits received from rural zoning in Minnesota during the past fourteen years is a difficult task. Positive criteria to be used in measuring benefits are lacking. Changing conditions usually are not directly attributable to any single factor, such as zoning, but are the result of several interacting factors. Thus the personal judgment of the individual analyst must be relied upon rather heavily for an appraisal of the effects of zoning.

Officials of zoned counties are almost unanimous in their expression of general satisfaction with the present ordinances and their results. The writer has attempted to refrain from being unduly impressed by these general statements of

approval since they are probably subject to a "favorable" bias.

Prevention of Isolated Settlement. It is evident that the major benefits of this nature will develop in some future period of industrial recession and rural settlement. However, in a 1950 survey of the zoned counties, five of the seven counties replying stated specifically that zoning had helped prevent isolated settlement in their counties.

The effectiveness of ordinances in controlling future settlement will doubtless vary among counties. In a county where the restricted districts cover only part of the isolated areas, such as in Carlton County, complete prevention of scattered settlement is certainly impossible. Under the rather comprehensive, highway-zoning type of ordinance of St. Louis County, complete isolation may not be prevented but isolation which would result in excessive county costs will likely be eliminated.

In a county where a small amount of individual pressure will bring about an illogical reclassification of an isolated tract, there is little hope for effective prevention of isolated settlement. However, despite certain omissions and weaknesses of the present ordinances, if either the town or county board is seriously interested in preventing isolated settlement there are sufficient restricted areas in every zoned county to prevent a great deal of this costly practice.

Consolidated Settlement in Suitable Areas. Consolidated settlement is obviously increased by forcing all settlement to take place within a limited area. In general the unrestricted district is better suited to settlement and agricultural development than is the restricted district. But directing settlement away from small tracts of poor soil is not a logical function of the Minnesota-type ordinance. In one county residents in the unrestricted

district are successfully farming isolated tracts of good land within the restricted district. This is logically in line with the ordinance which prohibits establishment of costly isolated residences but permits cultivation of isolated tracts of good soil, which may be economically profitable to the farmer and yet not too costly for his tax-paying neighbors.

Zoning should help to decrease costs of local government and assist the settler in locating a general area where his chances of success are maximized. These factors should encourage the more prudent settlers to establish farms in zoned counties. While this tendency may be present, statistics on population changes have not indicated a significant difference between zoned and unzoned counties during the 1940-50 decade.

Encouragement of Various Land Uses. When land is placed in the restricted district its speculative value for agricultural development may be considerably reduced. In such cases the assessed value of the property might be expected to be brought more in line with the productive capacity of the land for forestry or other extensive uses. This should encourage the development of these land uses. Actually, little evidence of direct tax reduction in the restricted district was found. However, in Koochiching County land in the restricted district is being approved for classification as auxiliary forests, with consequent special taxation considerations.⁶ It appears that this is an influencing factor in the approval of auxiliary forest applications in Itasca and St. Louis Counties as well. In other counties very little land has been approved for this classification.

That zoning is encouraging to private commercial forestry is indicated by the stated willingness of the larger pulp and paper companies in the state to cooperate

with the provisions of the ordinances. One large company plans to establish permanent homes for woods-working family men in each of their working compartments. Their policy is to establish residences for these men on the nearest good year-around road in the unrestricted district and provide daily transportation to the working area.

Several foresters of the Minnesota State Division of Forestry state that in reducing settlement in isolated areas zoning has helped reduce the forest-fire hazard where suppression is especially difficult due to inaccessibility.

Tax-forfeited forest land is often sold at the request of a purchaser who buys on the pretense of clearing the land for agricultural development, while his only actual interest is in obtaining the timber. After the timber is removed, the land, now usually in an unproductive condition, is again allowed to forfeit for non-payment of taxes. Auditors of zoned counties unanimously agree that zoning has helped reduce this waste.

Zoning has also encouraged county management of tax-forfeited lands for forestry purposes. When county people became convinced that a large acreage of land under their supervision was not going to be used immediately for new farms they became interested in seeing what income could be obtained from this land. Forestry has proven to be a profitable enterprise to several of the counties. Much of this land might be idle today if zoning had not helped call this waste to the attention of local people.

Inasmuch as forestry has been encouraged in recreational areas, and spotty, submarginal farming discouraged, scenery has been improved and recreational developments thereby encouraged. Due to the willingness of counties to reclassify land for recreational development, no evidence was found that the

⁶ *Minnesota Laws* 1927, c. 247.

recreational industry was in any way handicapped by zoning.

In two unzoned counties there was evidence that mining companies exerted pressure to defeat proposed zoning ordinances. Under existing state laws, forfeited land which is in a restricted district cannot be "repurchased" except under special arrangement and must therefore be purchased at a regular tax-forfeited-land sale.⁷ Mining interests object to this clause since mineral rights are reserved for the state when land is sold in a tax-forfeited-land sale, but are not so reserved when land is repurchased. Zoning has not retarded mining developments because of this provision, but the provision apparently has had a significant effect on zoning history in northeastern Minnesota.

Development from a Pioneer Society. In zoning, local people have publicly declared their recognition of the passing of the pioneer society stage of development. They have recognized that the day when a man can live completely unto himself is gone. People now generally agree that every citizen has a right to have a good road to his residence, good schools for his children, adequate fire and police protection and, at the same time, reasonably low taxes. Simultaneously, local people realize that each citizen has, in turn, certain obligations to society: he may no longer live completely where he pleases if this opportunity is likely to place excessively heavy taxation burdens or other costs on his neighbors.

Zoning may well help to discourage ill-advised back-to-the-land movements by indicating to potential settlers that all land is not capable of being successfully farmed, and that a satisfactory living cannot be made by isolated, pioneer-type settlement. When such movements are not prevented, new settlers will be forced

to realize that they are part of a community and as such they may expect certain services and must assume certain responsibilities. Settlement under such conditions is certainly more likely to succeed than where a settler sets out to "carve his home from the wilderness" without assistance.

Encouragement of Supplementary Measures. Zoning has also had an important effect on local people in encouraging them to act together in attempting to solve common problems. The effect on county forest management of tax-forfeited land is an example.

County school superintendents are enthusiastic over the effects of zoning in reducing their costs and indicate that the location of restricted districts has sometimes influenced the size and shape of new school districts. In some areas where zoning districts are rather large it is likely that school-district reorganization has occurred sooner than it would have without zoning.

Zoning encouraged the development of the complementary measure of relocation.⁸ St. Louis County has used these two measures to aid highway planning. A county official estimates that the St. Louis County relocation program has already saved local taxpayers approximately \$200,000. In one case zoning, combined with the relocation of four families (at a total cost of \$10,000), permitted a modification of the county's road construction program, initially saving taxpayers \$50,000 in construction costs and now saving approximately \$1,500 annually in maintenance costs.

No evidence was found of any use being made of county zoning ordinances by either state or federal highway agencies. Neither was any evidence discovered to indicate that local units of the Rural Electrification Authority are using

⁷ *Minnesota Statutes* 1945, Section 282.

⁸ *Minnesota Laws* 1945, c. 223; 1951, c. 289.

county zoning districts as a criterion in accepting or rejecting applications for electrical service.

Zoning has been of some assistance in promoting and assisting other programs, but this assistance has been limited due to a failure to publicize zoning in recent years, a lack of confidence in the stability of existing ordinances, and the failure of some ordinances to cover the county adequately and uniformly.

Conclusions

Approximately two-thirds of the fourteen-county study area has been zoned. Under present conditions any expansion of this area seems unlikely due to a current lack of interest in the zoning program.

While it appears that benefits have accrued to each of the zoned counties, the most important benefits to date may not have resulted from the direction of new settlement. The promotion of relocation, county forest management, school-district reorganization, and similar programs, the recognition of private obligations in modern society, and the encouragement of forestry have been important contributions. These latter contributions have been limited by occasional laxity in zoning administration and by a lack of adequate publicity for the program.

Certain ordinance weaknesses which are a result of the "township" nature of

zoning in Minnesota would seem to be more than offset by the better public support received as a result of such local control.

The present ordinances are sufficiently comprehensive to prevent a large amount of isolated settlement, despite the specific weaknesses described. Present ordinance administration is gradually weakening the ordinances by frequently failing to enforce the regulations, failing to keep a record of discontinued residences in the restricted district, and failing to amend ordinances in line with current fundamental conditions. This type of administration is encouraged by current public apathy regarding zoning.

The number of farms in the region is now considerably smaller than it was at the time of zoning. Thus in some areas restricted districts could be expanded and the effectiveness of the ordinances thereby improved without unduly increasing the number of legal non-conforming residences.

In view of these conditions it would seem that a public reappraisal of the zoning program, both in the individual counties and on a regional basis, would yield excellent results. Such a reappraisal should seek to eliminate only the more apparent weaknesses at the present time. Concurrent favorable publicity of the zoning program would also yield valuable benefits.

Mechanics of the Urban Economic Base: General Problems of Base Identification†

By RICHARD B. ANDREWS*

THE urban economic base for purposes of this discussion can be defined along lines followed in earlier articles of the series. Briefly described the base is that part of an urban economy which is composed of activities whose principal function is that of exporting goods, services, or capital beyond the economic boundaries of the community. The economic complement of the base is made up of service activities. Service activities of the community are primarily engaged in internal trade which involves sales of goods, personal services, and capital to local base enterprises, employees of the base, other service enterprises, employees of service enterprises, and unemployed persons within the community.

In the process of analyzing the economic base of a specific urban area there arise certain technical problems which include not only the selection and application of units of measure but also the process of base identification. Identification of the base is essentially simple as a working plan but rather difficult in application.

Identification, in a broad sense, is made as soon as the base is defined. If we think of the base as representing the export activities of an urban area then the problem seems to be simply that of identifying and listing such export organizations. However, it is at this point that a unit of measure is introduced. Clearly the exporters must be quantified in some way other than by a mere statement

of number of exporters. If the unit of measure for purposes of identification is employment then this measure is applied to the exporters and their relative employment standing in the community is established. A statement of the relation of base employment to service employment, total employment, and population is thus made possible. However, application of this procedure is vastly complicated by the fact that there are relatively few "pure" activities which can be said to be entirely basic or entirely service. It is, therefore, the segregation of basic and service elements from what we may call typically "mixed" activities that represents one of the principal general problems in the identification process.

There is also an associated difficulty, much narrower in scope than the problem of mixed enterprises, which arises as a result of limitations of the unit of measure. Reference is made here to the fact that the standard employment measure has difficulty in identifying such fields as capital export activity in a suitable manner.

Finally, it must be emphasized that an integral part of the process of identification is the setting of economic boundaries for the community. Without a clear definition of these boundaries it becomes difficult to identify basic activities with any degree of precision. For if exportation is to be distinguished it must be in terms of movement of goods, services and capital outward across the line which separates the urban community from its market. This particular aspect of identification will be discussed in a subsequent article on technique.

† This is the second in a group of four articles which, as a part of the longer series on the urban economic base, are concerned with some of the more technical problems which arise in the process of applying base theory to a particular community economy.

* School of Commerce, University of Wisconsin.

Identification Techniques

There are currently in use several general techniques whereby the basic economic activities of a community may be segregated and measured. The paragraphs that follow will summarize some of the more prominent of these techniques and indicate what their principal virtues and shortcomings are. An attempt will be made to estimate which of the techniques shows the greatest promise and would therefore warrant the greatest concentration of effort directed toward procedural refinement and, perhaps, conceptual extension. Particular attention will be paid to the common problems that arise in the application of familiar identification techniques. These common or general problems are to be distinguished from special identification problems which are not found to an important degree in all cities.

The discussion is not concerned with detail problems of obtaining raw employment data where this unit of measure is used. It is assumed that the usual sources for this particular unit are available, i.e., direct data collection from federal, state, and urban governmental agencies.

Residual Method

The residual method of identification is a technique devised by Homer Hoyt, but no longer used by him in his later studies. Operating as a rough rule of thumb, it was employed prior to 1940 when a detailed breakdown of employment by type of industry was unavailable.¹ Briefly stated the residual method may be described as follows:

All known basic enterprises are measured in terms of the number of their employees. As long as a heavy proportion

of the activities of these enterprises was in the export field and only a minor proportion identified with local trade the entire enterprise was considered basic.² A 1:1 ratio between basic and service employment was assumed by Hoyt in his earlier studies. From those activities which were not predominantly basic were subtracted the number of employees typically assumed to be necessary for the performance of the service functions of the community. The size of this deduction was computed from the 1:1 ratio. The residual following this deduction for service purposes was allocated to the base side of the local economy since it was assumed that the service requirements of the community had been completely cared for by the previous computation. In this manner the mixed enterprises—those not clearly basic—were broken down into their base and service components.

At the present time this technique should no longer be used as a complete breakdown of employment, for every urban region is available. Hoyt changed his views on the immutability of the 1 to 1 ratio and changed the entire technique of identification in his New York study.³ It may be to the point, however, to criticize the technique which is now obsolete, since it has a certain persuasiveness traceable in part to the relative ease of its application.

The assumed ratio was the core weakness of the technique. As will be emphasized in later articles, one of the principal objectives of investigating the economy of a community is to discover what the base-to-service ratio is.⁴ Con-

¹ This idea seemed to be implicit in Hoyt's reasoning in his first studies.

² Homer Hoyt, *Economic Status of the New York Metropolitan Region in 1944* (New York: Regional Plan Association, Incorporated, 1944).

³ The ratio between basic and service employment is found to vary from 1 to 0.6, to 1 to 2.1. Weimer and Hoyt, *Principles of Real Estate*, 3rd edition, (New York: The Ronald Press Company, 1954), p. 352.

⁴ Arthur M. Weimer and Homer Hoyt, *Principles of Urban Real Estate* (New York: The Ronald Press Company, 1939), pp. 44-45. For most recent method, see: Weimer and Hoyt, *Principles of Real Estate*, 3rd edition (The Ronald Press Company, 1954), ch. 18, pp. 332-345.

sequently, to estimate the ratio is to assume away what should be one of the important findings of base research. Of course in the circumstances under which Hoyt was working with the Federal Housing Administration in the Thirties survey speed was important, complete data on employment by type of industry was not provided until the census of 1940, and a rule of thumb such as the ratio provided was an expediter. With far more complete statistical data on employment now available, and with more improved techniques for analyzing basic and service employment, this early pioneer method is merely a museum piece.

It is no longer necessary to make the assumption that certain activities are 100 percent "base types" and can, therefore, be classed automatically as basic. Manufacturing is an example. However, certain portions of such enterprises may be engaged in service activity; a situation which, apparently, this technique does not assume away but simply does not regard as important.

We must conclude, therefore, that the residual method had many limitations and employed assumptions which would not produce the most accurate results. Since this method has been abandoned by its originator, interest in it would now be only historical.

Macrocsmic Method

Base identification by the macrocosmic method is of fairly recent origin as a technique.⁵ It is used, principally, in large urban areas where more detailed techniques would be costly and time-consuming. What this approach does, in essence, is to make a comparison of the employment pattern of the area under study with that of the nation at large. As one research team expressed the idea:

⁵The term "macrocosmic" is here introduced by the author in view of the absence of a single descriptive name or term in the literature.

"... manufacturing currently employs 40 percent of all gainfully employed persons in the Chicago area, whereas the national percentage is 27 It may be inferred, therefore, that the goods produced by these 13 percent 'extra' workers are probably destined for export markets."⁶

It is not assumed, of course, that each urban area conforms strictly to the national pattern of production and consumption. But it is felt that relationships such as the one described will indicate the rough magnitude of local employment as compared to a national norm. Situations will occur with great frequency in which all or part of an industry within a community may be below the national average and yet that industry may be a heavy exporter. This calls to mind as an example the highly specialized production of machine tools in a small city. The likelihood is great that none of the machine tools will be consumed locally. Yet under the macrocosmic method a substantial proportion of the employment total of the firm would be classified as service rather than basic. In his studies Hoyt assumed that all capital goods industries such as machine tools were basic. Roterus made an attempt to estimate the proportion of output of a capital goods industry that was consumed locally but found it involved very elaborate and difficult compilations. There may be adequate ground for the criticism that as the size of the city under study declines the reliability of the macrocosmic method also declines. The basis for this thought is to be found in the example cited above. It suggests that plant employment size within an industry as

⁶W. E. Hoadley, Jr., and C. G. Wright, *Employment, Production and Income in the Chicago Industrial Area* (Chicago: Research Department, Federal Reserve Bank of Chicago, 1948), p. 3. The authors are, of course, emphasizing the idea that all industrial activity devotes a certain proportion of its energies to serving local needs. This proportion is here assumed to be the same for the local urban community as it is for the national community. Anything in excess of this proportion is considered export activity.

among a group of communities may not necessarily vary widely whereas the population distribution of the communities under consideration may be very wide. This line of reasoning further suggests that as communities decline in size the proportionate volume of local purchases of the goods being produced will also decline. Consequently, a heavier proportion of employees would be attributable to the export or basic phase of the industry in the case of the small community than in the case of the large one. In addition to this quantitative consideration there is a qualitative question of which users of the macrocosmic method are well aware. This question is again one which is suggested in the example of the machine tool plant. Specifically, locally produced goods or services may not be demanded locally for many reasons which would include the traditional deterrents of price and taste, a high degree of specialization, or the simple fact that the good or service produced is part of a production chain which is to be continued in another community. On the other hand it is well recognized that the production of consumer necessities, such as certain forms of finished food products, would engender fairly large local trade.

Recognition of some of these situations is apparent in the adjustments which are made for variations in urban consumption and savings habits as against those of the nation as a whole.⁷ This type of qualification, however, raises a question as to whether there may not be, in addition, some significant variations among urban areas in consumption and savings habits traceable to variations in the character of their economic bases and social patterns.

Among the many involved adjustments which must be made when the macrocosmic method is employed are

those emphasized by the short but deep section on technique found in the Cincinnati study of 1946.⁸ Here Victor Roterus and his staff point out that "the formula for determining the urban-serving employment must be varied with each activity because urban consumption differs in many cases from national (urban-rural) consumption."⁹ The report correctly stresses, moreover, the fact that macrocosmic conversion assumes that a community draws as heavily as possible on local production to satisfy its demands before turning to outside sources. This assumption simply does not hold in many instances.¹⁰

A minor criticism of the macrocosmic method which was also mentioned in connection with the residual technique is the question which arises concerning the inclusiveness of the approach. In other words macrocosmic conversion is no more effective for identification purposes than the residual approach when it comes to problems of capital export, retirement incomes, commuter activity and the like. There is also the observation to be made that occupational and industrial classifications of the U. S. Census may not always be sufficiently fine in particular cases to give the precision that may be desired, especially in situations where firms contain mixtures of activities which must be separately counted in order to be used in the technique.

This writer is left with the feeling that, whereas some such approach as that of the macrocosmic is almost a necessity in very large metropolitan areas, it leaves wide margins of error traceable in the main to the numerous potential variables involved. There is certainly a substan-

⁸ Cincinnati City Planning Commission, *Economy of the Area* (Cincinnati: City Planning Commission, December 1946), p. 23.

⁹ *Ibid.*, p. 23.

¹⁰ *Ibid.*, p. 24.

⁷ Hoyt, Regional Plan Association, Inc., *op. cit.*

tial question as to whether or not the variables (if recognized) can be weighed and compensated with satisfactory precision. Finally, it is not altogether clear from the writings inspected by this author whether or not ample testing of the macrocosmic method has been carried out. Apparently single industries within a community have been tested.¹¹ However, there is the very real likelihood that the testing has not been extended at one time to several communities. Consequently, the unwary investigator who attempts to identify the basic and service elements of his community and uncritically applies the macrocosmic technique may obtain inaccurate results. What is needed is an investigation of the technique *per se*, one which tests it in different sizes and types of communities. It might be possible to start this type of investigation economically by using several small cities where the macrocosmic method could be applied and then checked by actual counts that employ other methods of identification that are impractical for large metropolitan areas.

Sales-Employment Conversion

Among the identification techniques which are applied with varying degrees of success to small cities the sales-employment conversion method is the one deserving most attention. As was indicated in the preceding article on units of measure this method employs the two "standard" measures (employment and payrolls) for identification purposes. Its objective is simply that of determining the proportional shares of sales made by an enterprise inside and outside the economic community however it may be defined. These proportions are then applied to what might be called the "working" unit of measure, let us say employment, and a basic-service distribution of the measurement factors results.

¹¹ *Ibid.*

The commonest means of applying this technique is through the questionnaire and interview. The questionnaire approach is simple in concept but often complex in execution. It has been employed principally as a means of segregating basic from service employment in the retail fields. It has not been used quite as extensively for segregation purposes in the field of personal and professional services. Both the questionnaire and interview techniques of executing sales-employment conversion are to be thought of as field approaches *contra* the deductive residual and macrocosmic. Because of their more direct approach and the fact that they usually are employing fresher data they are to be preferred to the deductive techniques. However, there are problems of size of universe, speed of data collection, and cost to be considered in the application of any identification technique. It is because of these conditions that in many instances the process which is less desirable in terms of precision must be employed.

In execution the questionnaire and interview techniques may be used separately or in combination depending on the conditions under which the investigation is to be made. A simplified interview approach involves obtaining from responsible management an estimate of the percentage of business which is carried on by the enterprise outside of the boundaries of the economic community or the percentage of sales to shoppers, tourists, and similar groups who come from outside the community. These proportional estimates are then applied to whichever unit of measure is used in the identification process, here *employment*. The basic and service elements can then be quantified (or converted from sales to employment) for the particular enterprise and eventually cumulated into industry, basic and service, enterprise

classifications. In the event that management is not certain concerning the export and service aspects of its enterprise other approaches must be employed to obtain the data or to check on management's statements.

It is at this point that the customer questionnaire may be introduced. The objective is, of course, that of determining the residence or business location of the on-the-spot purchaser. Such questionnaires are usually distributed directly to the customer when he is at the place of business under analysis and can easily include questions on patronage of other places of business and local buying habits in general.

Mailing lists are of doubtful value as a customer data source in this connection because they may either be purchased lists or include only charge customers of the enterprise being studied.

Delivery and mailing records provide another general variety of sales-source check. However, these records are not kept by all enterprises and if they are maintained they alone are not adequate indicators of export trade, particularly in the retail field where cash and carry is still strong as a buying technique.

However, in the case of enterprises the bulk of whose transactions are with customers at a distance as against an on-the-spot-purchase basis the problem of segregation of base and service enterprise data may be somewhat simpler, providing the data are made available to the investigator. The principles of sales-employment conversion are, of course, applied here as well. Greater accuracy of results may be obtained if customer account records are made available. This type of segregation can be applied with even fewer complications to the operations of the mail order house and hotel.

However, for the retail merchandise firms of a city and the dispensers of busi-

ness, personal, and professional services the practical problems of segregation are formidable. Partly by way of review some of the more outstanding difficulties may be pointed out.

The customer questionnaire has, to this writer, always appeared a difficult device with which to work. Even assuming a good percentage of responses there remain knotty questions concerning the representative character of the sample in terms of all types of customers. The meat of this last point is that it cannot always be assumed that customer responses are evenly distributed by type and hence by location.

Another problem in applying the questionnaire and interview technique arises in the fact that the number of small operators in the merchandise, personal and professional service field within one community is often very large. The baffling scope of a complete coverage operation consequently forces the use of some sampling device. As a result the investigator may have to accept the sample of a sample. This problem will, of course, increase in seriousness progressively with city size.

Finally, it should be reemphasized that where management is requested to estimate export activity it is at a disadvantage since it is forced to think in terms of an economic community boundary which may be entirely unfamiliar in terms of patronage breakdowns. As a consequence, estimates are not likely to be accurate.

From what has been said it is apparent that, whereas the character of data collected by questionnaire and interview is to be preferred to that made available by more round-about processes, it is also guilty of significant flaws. The presence of defects in an investigatory process suggests certain compensatory actions. On the one hand, weaknesses in a pro-

cedure may be lessened in seriousness or, at best, completely removed by concentrated analysis of the causes and balancing cures. In any event, conclusions drawn from data based on procedures with recognized blemishes must be treated carefully and adequate allowances made. If the flaws appear insuperable under the system of data collection used and if there are encountered, at the same time, great difficulties in judging what compensation should be made for such inadequacies, then there is ample ground for believing that a new technique must be found.

Specifically, the interview and questionnaire methods are too closely bound to the rather unwelcome but often unavoidable process of estimating. The inadequacies of this process stemming from errors in human judgment and simple lack of supporting data are too well known to warrant further comment. One must conclude, therefore, that, whereas there are no doubt many improvements yet to be made in this approach, there remains the fundamental weakness of the source material. Consequently, there appears to be an urgent need for the development of new identification techniques in the field of segregation particularly as they apply to wholesaling and retailing of merchandise and other business, personal, and professional services.

Sampling

Sampling is not a technique for general base identification segregation. It is, rather, a statistical device which is implicit in such techniques as sales-employment conversion involving use of the questionnaire and interview approach.

There may also be a sampling decision to be made as to which "representative" enterprises shall be studied within the various industrial classifications of a community. Then, when the selection has

been made, there arises the possibility of the application of sampling within the individual enterprises.

From another point of view the sampling device is a compromise between residual techniques and the more desirable form, complete coverage by questionnaire and interview. It almost goes without saying that the accuracy of this device is dependent of the individual reliability of the sampling system employed.

Whereas sampling holds great hopes as a means of improving the precision and increasing the simplicity of the identification process, it must be remembered that the really important factor in this picture is the reliability of the data being sampled. As was indicated in previous discussion of this matter the data in too many cases are imprecise. Hence the task seems to be one of improving the data gathered at the enterprise level. This may be brought about by the development of new and more intensive techniques of analyzing enterprise records and/or by devising questionnaires that get at the ultimate facts desired by indirect means that reduce the use of personal estimates. Procedures such as these will be expensive and time-consuming. However, these difficulties may in turn be reduced by the intelligent use of sampling devices.

Dollar-Flow Measurement

Up to this point the discussion has not concerned itself with the question of the identification of capital export. As was mentioned in the article on measure, the unit of measure employed in the process of base identification is not universal in that it can identify all types of base activity within the community.¹² Thus far, identification has been analyzed in

¹² Richard B. Andrews, "Mechanics of the Urban Economic Base: The Problem of Base Measurement," *Land Economics*, February 1954.

terms of employment and sales as the units of measure. Capital export has been ignored for the technical reason that there is, as yet, no generally practicable means of identifying it. The Oskaloosa study which presented a rather complete dollar-flow picture for that small Iowa community was able to make such an identification.¹³ However, this technique due to its complexity would be impractical for general application particularly in the case of large cities.

In the opinion of this writer the broad outlines of capital export as a problem in measure and identification take the following form.

Capital is exported from a community by specialists and nonspecialists. The specialist may be thought of as the familiar financial firm whose business is concentrated on the making of loans both local and "foreign." In the case of the specialist there is no peculiar type of measure and identification problem other than those described in connection with the standard approaches discussed earlier. A relatively simple case is that of the large metropolitan commercial bank where a base-service division of employment and payrolls could be established on the basis of geographical distribution of loans. Here, of course, a concurrent determinant of base-service segregation would be the geographical dispersion of depositors some of whom would also be the consumers of loans. Clearly, therefore, the commercial bank presents a dual type of function, loan and deposit service, the parts of which would have to be successfully reconciled in order to yield an accurate segregation of base and service activity. This type of reconcilia-

tion has apparently never been attempted but may well find a solution in a geographical allocation of profits as between local and extra-area borrowers and depositors.

It is, however, the non-specialist exporter of capital who presents one of the most difficult problems within the field of identification, one that may never have a satisfactory solution.

The non-specialists include business firms and individuals with surplus funds available for outside investment. Also classed as non-specialists are individuals whose pension and insurance transactions involve, in the community aggregate, an important capital export volume and hence an important influx of interest payments and matching funds. How these types of capital export are to be located, measured, and then integrated with other base data remains a challenging and yet unconquered segment of the identification problem.

Conclusions

One leaves the subject of general identification technique problems of the urban base with a limited sense of frustration brought about by the sheer size and complexity of the task of introducing greater precision and coverage into a subject field which throws up impressive barriers of a variety so common in the social sciences. It is this writer's belief that up until the present such significant problems as measure and identification have been treated all too summarily. The main fault of approach lies in the fact that all the work which appears to have been done in these technique-problem fields has been performed as a part of a larger work project. For example, an economic base study is executed within a particular community. In the course of the study the inadequacies of measure and identification techniques are appreciated anew. The

¹³ "Oskaloosa versus the United States," *Fortune*, April 1938. Homer Hoyt in his *The Economic Base of the Brockton, Massachusetts, Area* (1949) gives attention to property returns as a part of a community income and expenditure analysis. However, he does not examine the intricacies of capital export *per se*.

research staff involved reviews the thinking on the subject and makes some change for the better in identification approach. In a sense these are measures of expedience. Time and money are at a premium and there are many other problems with which to contend. It is not surprising, therefore, that we inch ahead, and sometimes backward, in this vital sector of the urban base technique field. It is impossible to avoid the somewhat sententious ending of articles such as this by saying that what is needed is more research. But that is precisely the need in this case. However, the research must be devoted

exclusively and intensively to the one subject and not combined in general studies of the base.

Unfortunately the complexities of the base identification process have been merely sketched in this discussion of *general* problems. It must, therefore, be the business of the next article to discuss the detailed special headaches of the identification field. Here will be touched upon such subjects as commuter identification, "significant" base activities, and the variety of base activities derived from certain types of on-the-spot-purchase processes.

Reports and Comments

The Control of Ohio River Pollution

SEVERE drouth last year in the Ohio Valley pointed up the critical nature of the regional water pollution problem in a way nothing else could. Because of fallen stream levels, industrial water supplies were limited by the intensified pollution; farm water supplies were damaged and made unfit for animals, and many municipal water plants were extended to their last measure of protection in making water safe for drinking. This is the report of Dr. John D. Porterfield, Ohio's health director and chairman of the Ohio Water Pollution Control Board.¹ Dr. Porterfield has noted the similarity of the circumstances above and those which prevailed in the drouth-stricken 1930's when epidemics of intestinal illness were traced to pollution.

The increased awareness of the pollution problem, brought on by that earlier drouth, motivated a series of federal and state enactments which today hold out the promise of pollution-free water in the Ohio River and its principal tributaries. Remedial efforts come none too soon for the use of water is increasing rapidly, largely because of growing industrial demands; and polluted streams further aggravate the already serious problems which accompany any water shortage. Water-borne waste deposits which settle in the stream bed can slow the rate at which ground water reserves are replenished and contaminate these reserves as well. Polluted streams can infect water main systems through underground openings in broken main sections. Finally, pollution intensifies the drouth problem by seriously reducing the usefulness of whatever water supply there may be. These pollution-caused evils combine to threaten future growth if not continued economic activity at the level presently attained in the Ohio River Valley and in the valleys of its tributaries similarly polluted. Industrial water needs are great—65,000 gallons for a ton of steel, 320,000 gallons for one ton of synthetic rubber,

50,000 gallons for a ton of explosives, to cite a few.² And contaminated streams do not furnish the quality of water needed by industry.

What is the source of the pollution in the Ohio and its tributaries? Into these rivers (in 1950) were dumped the untreated wastes from more than 5,000,000 people, industrial wastes equivalent to another 7,000,000 people, and other materials, mostly from coal mine drainage, which contained more than 2,500,000 tons of acid.³

The pollution threat has not gone ignored. Following the drouth-pollution crises of the 1930's, the eight states whose areas are partially included in the Ohio River Basin (Illinois, Indiana, Kentucky, New York, Ohio, Pennsylvania, West Virginia, and Virginia) began to work together to draft an interstate compact by which an administrative commission would be created to control future pollution and to abate existing pollution in the Ohio River drainage basin. Much of the credit for promoting the compact idea goes to the Cincinnati Chamber of Commerce.

The use of the interstate compact-commission was a particularly apt choice of instrument to meet this eight-state pollution problem. With insight into the nature of future needs the drafters of the Constitution had provided for the solution of interstate problems which were solely of regional importance. With the consent of Congress, agreements or compacts between states are entirely constitutional.⁴

In June 1936, Congress authorized the eight states in the Ohio River basin to enter into a compact whose purpose was the abatement and control of water pollution.⁵ In 1938 delegates from the eight states reached

² Ohio River Valley Water Sanitation Commission, *Second Annual Report*, 1950, p. 7.

³ *Ibid.*, p. 6.

⁴ The Constitution of the United States of America, Article I, Section X. See also: *Virginia v. Tennessee*, 148 U. S. 503, (1893).

⁵ 49 U. S. Stat. at Large, 1490.

¹ *Dayton Daily News*, December 15, 1953.

agreement on the form and content of the compact which was submitted to the Congress and the respective state legislatures for approval. Congress sanctioned the compact in July 1940,⁶ and by March 1948 the eighth state ratification had been enacted. The Ohio River Valley Water Sanitation Commission, the administrative body established by the compact, came into existence in Cincinnati on June 30, 1948.

Each of the participating states pledged its faithful cooperation in combatting present and future water pollution. Further, each state agreed to enact the legislation necessary to place and maintain the waters of the basin in a sanitary condition. (The steps taken by the state of Ohio to fulfill this pledge will be discussed below.) The scope of the agreement was broad; Article I includes "the rivers, streams, and water in the Ohio River basin which flow through, into, or border upon" the signatory states.

For administrative purposes, the Compact created the Ohio River Valley Water Sanitation Commission to which each state appoints three commissioners. The United States Government is also represented by three commissioners. Most of the state-appointed members are public health and conservation officers. The federal representatives come from the Fish and Wildlife Service, Public Health Service, and the Corps of Engineers. The staff of experts, which carries on the day to day work of the Commission, is headed by Edward J. Cleary, the Executive Director and Chief Engineer.

To finance Commission activities, each state contributes to the annual budget, as determined by the commissioners, on the basis of its population and area within the Ohio River drainage basin as defined. For example, the first annual report (1948-1949) showed that Ohio contained 19.1% of the area within the Ohio River drainage basin and included therein was 26.1% of the basin population. The arithmetic average of the Ohio area and population percentages was 22.60%. Ohio, therefore, contributed \$22,600 of the \$100,000 budgeted for that year.⁷ The Commission may not incur any financial obligation before making an appropriation to cover the commitment.⁸

Compact Article VI states: "The guiding principle of this Compact shall be that pollution by sewage or industrial wastes originating within a signatory state shall not injuriously affect the varicous uses of the interstate waters as herein before defined." These uses principally include the provision of public and industrial water supplies, recreation, and the maintenance of fish and other aquatic life. To achieve these goals the Commission is authorized to study the pollution problems of the district and recommend uniform legislation to the respective state governors. The Commission also consults with and advises the states, communities, corporations and others on their particular pollution problems and—what is of prime importance—the construction of sewage and waste disposal plants.

The construction of sewage and waste treatment plants must be coordinated with Commission-determined water quality and waste treatment standards for each section of the Ohio River. Such standards are decided upon after thorough research by staff experts and a public hearing for all interested parties in conformance with traditionally observed due process procedures. Standards will vary all along the course of the river because of differences in such variables as flow, location, self-purification and the usage made of the water at various points. The signatory states agreed that wastes which flow into interstate waters shall be treated to meet Commission standards within the reasonable time required to construct the necessary facilities. In the event that voluntary or state action fails to bring about the beginning of a program leading to adequate waste or sewage treatment the Commission has authority to step into the situation. It may set a date and order any municipality, corporation, person or entity to take prescribed remedial action by that time. Such orders, issued only after proper notice and hearing, become effective with the satisfaction of two conditions: the assent of a majority of the commissioners from a majority of the states, and with the assent of at least a majority of the commissioners from the state in which the order applies.⁹ Any state court of general jurisdiction or a United States District Court may be resorted to for either an order to comply with the Commission order or for review of an order.

⁶ 54 U. S. Stat. at Large, 752.

⁷ Ohio River Valley Water Sanitation Commission, *First Annual Report*, 1948-49, Appendix C.

⁸ Ohio River Valley Water Sanitation Compact, Article V.

⁹ *Ibid.*, Article IX.

To date no orders of the type discussed above have been issued. The Commission has chosen instead to achieve its goals by earning the goodwill and gaining the cooperation of all interested parties. This program has proceeded along two lines: cooperation with state governments and cooperation with industry committees.

Cooperation with state pollution control authorities is relied upon by the Commission to achieve compliance with its water quality and waste treatment standards. Each polluter is issued a notice (signed by Commission officials and the three commissioners of that state) which sets forth the requirements for waste treatment; the notice requests that the affected party inform its state pollution control agency of the extent to which the standard is being met or when the facilities necessary to attain the standard can be completed. The state agency reports semi-annually to the Commission on the progress toward compliance. The Commission maintains a docket-file of all notices, reports and correspondence between the three parties and in this way accumulates a complete record which is usable in the event that the Commission is forced to fall back on the legal enforcement authority described earlier.

Perhaps no better illustration of state government and Commission cooperation can be shown than that in the state of Ohio. In the year following the establishment of the Commission, the Ohio General Assembly (effective August 26, 1949) granted the Ohio Department of Health the power necessary to meet its obligations under the Compact.¹⁰ (Prior to the enactment of this statute, the Department could take remedial action only upon the request of local officials or a petition from local voters.) Thus, the Department was responsible for supervising sewage and industrial wastes as well as reviewing and approving plans for waste disposal. Most important of all, the Department gained the authority to adopt and enforce orders, hold hearings, institute court proceedings, and promulgate regulations for stream zoning and classification. In the legislative hearings on the 1949 act, Commission members and staff experts appeared to testify and worked for the passage of the needed statutory provisions.

Still stronger anti-pollution measures were adopted by the 1951 Ohio General Assembly.¹¹ The new law, effective September

27, 1951, created the Ohio Water Pollution Control Board. It is composed of five members who represent health, natural resources, commerce, industry, and municipalities. The statute names as board chairman the state director of health. Taking over the pollution control functions of the department, the new board set up a system of granting permits to discharge any wastes into Ohio waters. Polluting water without a board permit is an offense punishable by fines up to \$500 a day and possible imprisonment. Permits have been issued for periods ranging from 2 months to 2 years, with the longest permits going to those applicants whose waste discharges have been sufficiently treated so as to meet control standards. Even these permits are reviewed every two years. All other permit applicants are informed that subsequent renewals will depend on their showing that specific measures have been taken toward pollution abatement.

Faced by the fact that many municipalities and corporations had not even begun to plan for waste treatment, the board has found it necessary to allow time for planning, financing and construction of the necessary facilities. However, board policy requires the establishment of a time table and the performance of each step within the prescribed time is a prerequisite for permit renewal.

Ohio's permit system has proved successful in the short time it has been administered. The Ohio Water Pollution Control Board has reported the changes that have taken place. Of the 5,500,000 Ohioans whose communities are covered by the permit program, only 1,000,000 had adequate sewage treatment when permits became necessary in September of 1952; 2,500,000 had inadequate treatment and 2,000,000 had no treatment at all. Although the adequate treatment figure had not changed by December 1953, the inadequate treatment group had grown to 3,300,000, while the group with no treatment had fallen to 1,200,000.¹²

By the summer of 1953, 38 Ohio communities, whose total population exceeded 2,000,000, were constructing new sewage treatment plants and improving those already built. The value of these projects totaled \$80,000,000. In recent local elections some 20 communities authorized over \$17,000,000 in bonds for new disposal facilities.¹³ Speaking

¹⁰ Ohio General Code, Sec. 1240-4.

¹¹ Baldwin's Ohio Revised General Code, Chap. 6111.

¹² *Dayton Daily News*, December 17, 1953.

¹³ *Dayton Daily News*, December 18, 1953.

for the State Pollution Control Board, its chairman, Dr. Porterfield, was quoted as saying: "Despite the rapid progress being made, we cannot expect to reach a peak of sewage plant construction until sometime in 1955 or even 1956. This is because of the time necessary for the preparation of design plans, especially on larger projects. And then, actual construction will take several years on some of the large projects."¹⁴ However, Dr. Porterfield believes that 90% of Ohio's urban population will have adequate treatment facilities by 1960.

With regard to industrially caused pollution, the control board reports that 565 industries are known to discharge wastes directly into Ohio waters. Of these, all but 37 were covered by the permit program at the beginning of the year, and these will be included in 1954. One-third of the permit holders have treatment facilities and most of the others are planning or building them, Dr. Porterfield has said.¹⁵

It is interesting to note in passing that membership in the Ohio Valley Commission is only one of three agreements under which Ohio is cooperating with others to control pollution. With the U. S. Public Health Service there has been negotiated an agreement by which pollution in Lake Erie will be reduced and Ohio has joined with Indiana in an effort to clean up the Maumee.

In addition to its policy of promoting state cooperation, the Commission has expanded continuously a program aimed at strengthening industry cooperation with its pollution abatement and control activities. Because industry needs clean water, it and the Commission have much in common. Initially, the Commission organized a series of conferences with management representatives from each of the principal industries in the Ohio River drainage basin. These conferences explored the possibilities of an integrated pollution control program. As a result of these discussions "industry-action" committees were formed. The most recent Commission report shows that such committees have been organized from among executives in the steel, metal-finishing, distilling, chemical-salt, organic chemical and oil refining industries. There is also an advisory committee which represents bituminous coal producers. These committees have been successful in creating strong bonds of con-

fidence between the Commission and each of the major basin industries. Each industry committee decides upon its own organization and program. The Commission will assign a staff expert to any committee which makes the request.

The committees serve five basic functions: (1) promoting in each industry an appreciation of the need to reduce pollution, (2) assembling facts and analyzing the waste disposal problems of each industry, (3) consulting with the Commission on water-quality and treatment requirements, (4) encouraging research and development of more effective means of controlling waste discharges and (5) pooling and disseminating information, via the Commission, among all industrial committees.¹⁶

Working for five years at the task of controlling a pollution problem fifty years in the making, the Commission has the goodwill of its associates in government and industry and a record of achievement as well. Work during these first years has been impeded at times by emergency-caused shortages and high construction costs. During this period not all of the signatory states have had statutes sufficiently strong to permit full compliance with Compact pledges. It was not until March 1953 that the last of the states succeeded in amending its laws to comply with Compact terms.

In its fifth annual report the Commission showed that municipal sewage from 43% of the basin population received some form of treatment. Facilities to serve another 10% were under construction, while final plans had been approved for other treatment plants capable of serving another 16%.

Of the 1,247 industrial pollution sources which discharge directly into the Ohio Valley streams, 66% are operating control facilities, 3% have begun construction, and 9% are working on plans for waste treatment plants.

The record of achievement in every one of the Compact states is encouraging. Not only has each state enacted all necessary statutes but each has established the necessary control agency needed to enforce these laws. There can be no doubt that a good start has been made at resolving a complex area problem.

PAUL GARFIELD

*Miami University,
Oxford, Ohio*

¹⁴ *Dayton Daily News*, December 17, 1953.

¹⁵ *Ibid.*

¹⁶ Ohio River Valley Water Sanitation Commission, *Third Annual Report*, 1951, p. 23.

Industrial Location Trends in Chicago in Comparison to Population Growth†

The Problem

THIS paper presents part of the results of a study of industrial location in the Chicago Standard Metropolitan Area.¹ It is concerned only with that part of Chicago called the Outer Zone, as distinct from the Inner Zone or Central Area of the city (see Figure 1). The trends in the location of industry in the Central Area of Chicago have been discussed in detail elsewhere.²

Land use in the city is dependent to a large extent on the pattern of industrial land utilization. The placement of manufacturing units, for example, may influence the distribution of residences, the network of the transportation system, and the location of service activities. To those interested in the city as a physical and social phenomenon the distribution of industry takes on particular importance. Urban planning, for example, as the antithesis to laissez-faire development, must take into account such trends as population growth, retail trade distribution, and industrial growth. Related to these trends are such factors as transportation facilities, utilities, schools, housing, etc.

Part of the general problem of the distribution of industry is the *movement of industry* from one place to another within the urban complex. Surprisingly, there has been little empirical research to measure the extent of industrial movement or decentralization in any particular city; or in fact, if there has actually been any decentralization at all. True, there have been studies of the growth of industry in smaller cities but there have been relatively few studies made of the problem in terms of the gain and loss of industry in our larger cities.³ The problem

assumes particular importance as a consequence of technological changes in transportation and atomic power.

A good deal of the research efforts of social scientists has been directed towards an examination of problems in the central part of our cities. Problems of crime, delinquency, housing, cultural conflicts, suicide, mental disease, etc., have each been studied in the locus of their major incidence. The central core of our cities displays more dramatically the processes of human ecology, urbanism, and the social problems associated with these processes. The central parts of our cities are also blighted and slum-ridden and we have made attempts to partially meet the problem through efforts at urban redevelopment.⁴

On the other hand, the rest of the city, i.e., the outer zone, has been relatively neglected by social scientists and practical planners. Since the location of industry is an important variable in such phenomena as residential housing, transportation, schools, utilities, etc., it seems proper to investigate the trends of industrial location in the relatively unblighted parts of the city. The study of industrial location trends, furthermore, can serve as a partial test of theories of city growth, particularly as these theories or hypotheses relate to industrial distribution. We may find that new and developing patterns of industrial location may warrant revision of the theories concerning the city.

This paper reports the results of a study of industrial location trends, including intra-city movement of industry, in what is known as the Outer Zone of the city of Chicago. The relation of population growth to industrial growth was included as a part of the study.

The Hypotheses

Five hypotheses were tested in this study.

(1) There was a change in the direction of industrial location as between the 1926-1930

† The writer wishes to acknowledge the valuable assistance received from the Commonwealth Edison Company of Chicago and the Public Service Company of Northern Illinois in gathering the data; the writer is also grateful for assistance rendered by the staff of the Chicago Plan Commission.

¹ Attention is called to the fact that this study is concerned only with manufacturing establishments.

² Leo G. Reeder, "The Central Area of Chicago—A Re-examination of the Process of Decentralization," *Land Economics*, November 1952.

³ Three studies of industrial decentralization in this country are of particular importance. They are: William Mitchell, *Trends in Industrial Location in the Chicago Region*

(Chicago: University of Chicago Press, 1933); Roswell C. McCrea and Robert M. Haig, *Regional Survey of New York and Its Environs* (New York: Regional Plan Association of New York, 1927), Vol. I; and *New York State Joint Legislative Committee on Industrial and Labor Conditions*, "The Problem of Industrial Migration," (Albany, New York, 1941 and 1942).

⁴ The National Housing Act of 1949, for example, provides funds to aid cities in redeveloping their slum areas.

and 1941-1950 periods. (2) There are no differences between the central area and the outer area of the city in terms of the directional movement of industry. (3) The trend of industrial location in the city parallels the trend of population growth. (4) Establishments that move from the city do not locate in suburban areas adjacent to their former locations in the city. (5) Decentralization of industry is not a phenomenon of the Outer Zone.

The Data and Method

The time interval selected for investigation was the ten-year period 1941 through 1950. The major sources of data were: (1) the annual reports of the industrial divisions of public utility companies, (2) the monthly reports of the Association of Commerce and Industry of Chicago. These data were checked and supplemented by field studies, schedule surveys, and participant observation while gathering the data at the utility companies. Census data were used for population sources but were not employed for industrial information since they reveal nothing about plant relocations.

The city was divided into two concentric zones, an Inner Zone (or Central Area) and an Outer Zone, and into five Sectors that extend through each Zone. The boundary lines of the Inner Zone closely approximate the Chicago City Plan Commission's "Re-development Area"; the Outer Zone includes all of the city land not embraced by the Inner Zone. For analytical purposes the seventy-five local community areas of the city were allocated to the Sectors and Zones. The boundaries of the Sectors and Zones were drawn primarily with reference to such major features as the Chicago River and main transportation arteries in the city; in all but one case these were also the boundaries of the local community areas.⁵ The five sectors may be identified as follows: I—North Side, II—Northwest Side, III—West Side, IV—Southwest Side, and V—South Side.

The trends of industrial location were examined by ordering the data into the following categories: (1) *the movement of industry to and from the Outer Zone of the city*, and (2) *the*

location of new industry in this part of the city. The location of the industry that moved into or out of the Outer Zone and the locational patterns of new industry were analyzed by reference to the sectors and zones. Unfortunately, there were no existing data on the total distribution of industry throughout the city so that a suitable base to show the differential rates of change was not available.

Results and Discussion

Hypothesis I that the industrial land use pattern in Chicago has undergone directional changes in the 1930-1950 period was verified. In a somewhat similar study made twenty years earlier, Mitchell found that the location of industry in Chicago was along "pre-existing lines of development."⁶ The data for the 1941-1950 period clearly indicate that industry was expanding into the North and Northwest parts of the city in numbers and in areas that did not reflect the previous pattern of industrial land use. Figure I provides a visual impression of the mass movement into those sectors. Furthermore, the data in this study did not agree with the earlier findings of Mitchell that "the continued development of the (Lake) Calumet region is the only evidence of industrial decentralization within the city proper."⁷ The present study showed that the Calumet district gained relatively little industry in the 1941-1950 period. On the other hand, the Southwest and Northwest sectors showed the only clear evidence of decentralization (cf., Table I), i.e., a substantial gain of industry. Analysis of the data showed that the Northwest sector attracted more new establishments than any other sector in the city, 37.4 percent of the establishments that located in the Outer Zone settled here. More than half of the plants that located in the Northwest sector had moved there from the Inner Zone of the city. Relatively few of the plants that moved from the central part of the city (the Inner Zone) located in the South and Southwest sectors of the Outer Zone. During the decade 1941-1950 not a single industrial plant moved from the Inner Zone to the area indicated on the map by the broken lines (cf. Figure I). In fact, only seven establishments, or 6.4 percent of the total moving from the Inner Zone to the Outer Zone located in the area East of the broken line, in Sectors IV and V. This is

⁵ Although any set of sectors meaningful for analytic purposes can be drawn, analysis of sector locational patterns indicate the advisability of certain modifications of these boundaries. For example, it would probably have been better to have drawn the boundary lines between major features and main transportation arteries rather than to coincide with them.

⁶ Mitchell, *op. cit.*, pp. 65-66.

⁷ Mitchell, *op. cit.*, page 63.

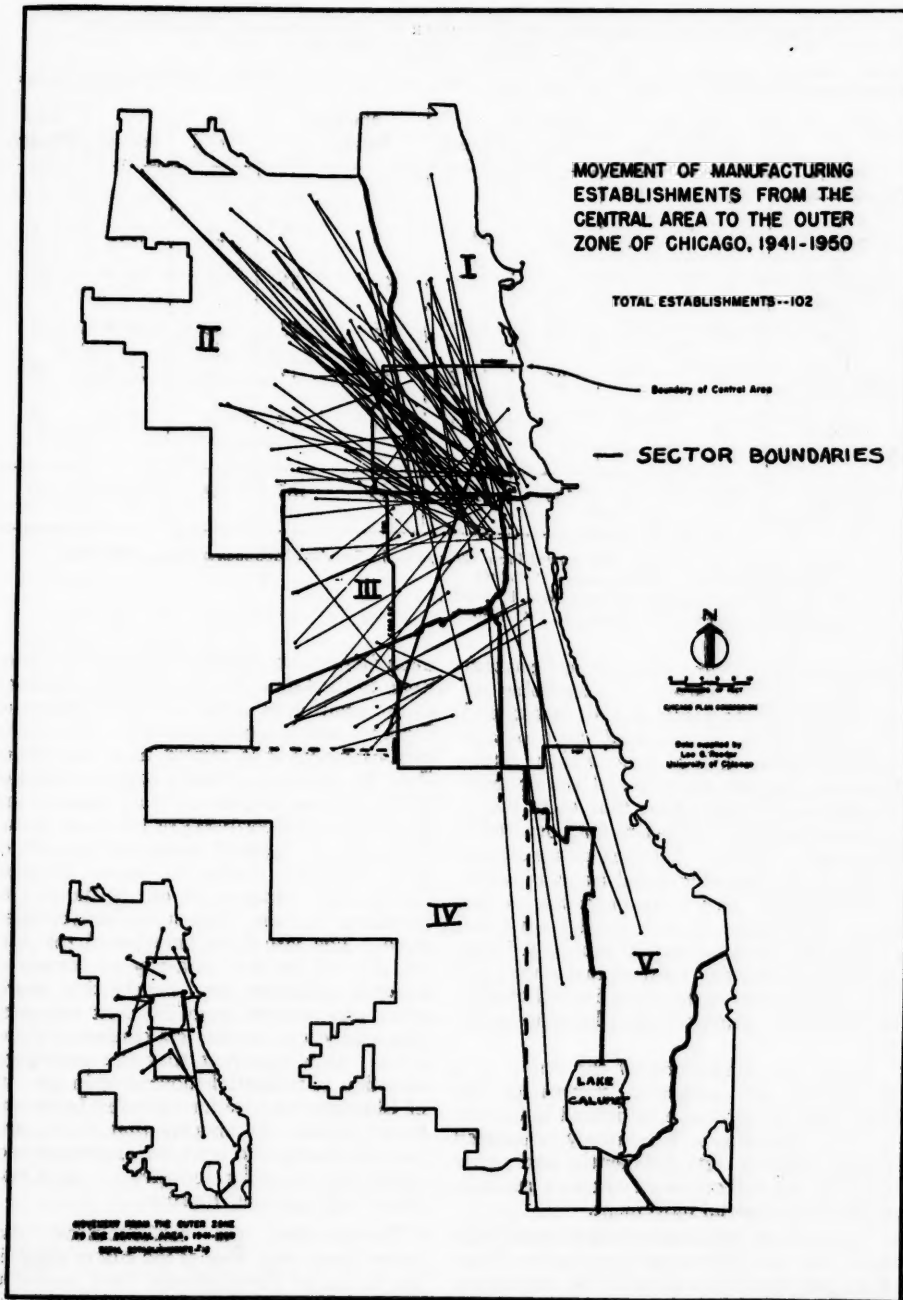


TABLE I—INCREASE OR DECREASE IN NUMBER OF MANUFACTURING ESTABLISHMENTS
IN THE OUTER ZONE OF CHICAGO, 1941-1950

Sectors	Number Moving Out		Out Total	Percent	Number Moving In		In Total	Percent	Net Change
	a	b			c	d			
I									
North	34	2	36	23.0	16	17	33	13.2	-3
II									
Northwest	40	1	41	26.1	44	51	95	37.4	54
III									
West	40	6	46	29.3	35	17	52	20.4	6
IV									
Southwest	25	1	26	16.5	39	17	56	22.0	30
V									
South	6	2	8	5.1	11	7	18	7.0	10
TOTAL....	145	12	157	(100)	145	109	254	(100)	97

a Manufacturing Establishments That Moved From Chicago to the Standard Metropolitan Area, 1941-1950.

b Intra-City Movement of Establishments, 1941-1950.

c New Establishments in Chicago Outer Zone, 1941-1950.

d Intra-City Movement of Establishments, 1941-1950.

all the more significant when it is realized that 74 percent of the vacant land available for industrial use was South of 95th Street, and 47 percent of the land was adjacent to Lake Calumet. More than 22 percent of the establishments that left the city had 100 or more employees. This suggests that these plants were seeking larger quarters for purposes of expansion. The fact that these plants did not locate in the large industrial tracts available in the Calumet area however, indicates that there were other factors in the situation. Apparently, location in the suburban fringe of the city provided most of the advantages of a city site and at the same time eliminated the problems associated with location in the city.

From an examination of the data, it is clear that the industrial growth of the Southwest Sector was experienced in form of new establishments, i.e., newly organized plants, branch establishments, and firms moving into the city, and not as a result of intra-city industrial movement.

The second hypothesis, which stated that there were no differences between the Inner Zone and the Outer Zone in the directional movement of industry was verified. Figure I shows clearly the directional movement of

manufacturing establishments from the Inner Zone to the Outer Zone. Attention is called to the small map in the lower left corner of Figure I which shows that only a few of the establishments that moved from the Outer Zone located in the heavily congested part of the Inner Zone and most of these plants found locations on the periphery of the Inner Zone. The data in Table I indicated that Outer Zone industry tended to move to other Outer Zone locations or out of the city to locations in the Standard Metropolitan Area. The visual presentation of the data (cf. Fig. I) on the intra-city movement of industry indicates very clearly that movement was outward from the most congested part of the city to the less congested Outer Zone. It is apparent that the centrifugal direction of industrial movement in the city of Chicago was true for both the Inner and Outer Zones. It appears that the central part of Chicago did not have an economic or social attraction for industry in the Outer Zone desiring a new location.

Furthermore, the establishments that moved from each zone of the city to places in the Standard Metropolitan Area tended to follow a similar pattern in location. For example, almost 80 percent of the establish-

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ments that moved from the Inner Zone and 78.6 percent of the plants that moved from the Outer Zone to the Standard Metropolitan Area settled in the belt of communities immediately adjacent to and surrounding the city of Chicago. There was a tendency for these establishments to relocate in S. M. A. sectors that were similar in geographical direction to their original sector locations in the city. Thus, firms in West Sector of the Outer Zone would tend to relocate in the Western suburbs. This was true for both the Inner and Outer Zones.

TABLE II—RANKING OF CHICAGO OUTER ZONE SECTORS BY POPULATION AND INDUSTRIAL INCREASE, 1940-1950

Sector	Rank in Population Increase	Rank in Industrial Increase
I North.....	4	5
II Northwest.....	3	1
III West.....	5	4
IV Southwest.....	1	2
V South.....	2	3

Hypothesis III, stating that the trend of industrial location in the city is not significantly related to the trend of population growth was rejected. A relative ranking of the sectors by comparative increase or decrease in population and manufacturing establishments indicated that the phenomena are positively related (cf. Table II). The Spearman formula was applied to this ranking and yielded a coefficient of 0.600, indicating a moderately close relationship between these two factors.

Hypothesis IV, which stated that industrial establishments moving from the city did not locate in suburban areas adjacent to their former locations in the city, was rejected. As indicated above, the establishments leaving the city to locate in suburban areas usually moved to sectors that corresponded with their former sector location in the city. To test the hypothesis, the data were subjected to a chi square test of significance and the chi square of 31.05 was found to be significant at less than 0.01 percent level.^a

Examination of the movement of industry out of the city by reference to their former locations showed that the West Side Sector

lost the most establishments. It should be noted that this sector is the smallest of the five in the Outer Zone and also does not contain more industry than any of the other sectors. Table I also indicates that the Southwest and South Sectors respectively had the fewest number of establishments leaving the city. The data showed that most of the establishments which moved appeared to leave certain localized parts of the city in much greater numbers than other parts. Comparing the former locations of plants that moved with the location of the new plants in the Outer Zone showed that they were very often the same, indicating that the sites were suitable for industrial purposes. The important consideration here is that the characteristics of the industries leaving these sites may be the crucial factor in their leaving. In short, the size of the establishments or the need to expand plants located on sites unsuited for expansion, may be a major reason for certain parts of the city to exhibit cluster patterns of the former locations of establishments that moved to the suburban area.

Hypothesis V, tested by the data in this study, stated that the Outer Zone of Chicago experienced decentralization and it was disproved. A study of the data in Table I indicates that decentralization of manufacturing establishments did not take place in the Outer Zone in the ten years covered by this study. This table shows that 97 more establishments entered the zone than had left it in the period 1941-1950. The North Side was the only sector to show a loss of establishments. On the other hand, the Northwest Sector experienced the greatest gain in manufacturing plants.

It should be pointed out that the gain or loss of industry in each of the sectors includes the movement of industry from the Outer Zone to the Inner Zone and vice versa, in addition to new establishments.

Summary

The industrial pattern of the city of Chicago underwent some changes in the period covered by this study as a result of locational shifts of (1) the establishments that entered as new plants and (2) the intra-city movement of establishments. One of the most significant changes was the development of the Northwest side of the city as a major industrial development of the city's Southwest side. In both cases the changes that occurred indicated a shift in the previous

^a The statistical test indicates that the finding that industry tends to move to places in the metropolitan area that are adjacent to their locations in the city is statistically as well as socially and economically significant.

pattern of industrial location that had marked the industrial growth of the city.

A subsidiary finding of this study concerned one of the neglected aspects of the literature on industrial location—the intra-city movement of manufacturing establishments. The data in this study showed that there is more of this type of movement than is generally supposed and that its importance to the problem of industrial decentralization is not to be underestimated. For example, decentralization of industry could not be said to have occurred in the Inner Zone of the city if the establishments that move to the Outer Zone were not included in the data showing losses in that part of the city. As a matter of fact, 43 percent of the total number of manufacturing establishments that entered the Outer Zone in the 1941-1950 period had moved from the Inner Zone.

Among the implications in the data are: (1) the city continues to be an attraction for manufacturing industry, especially the outer part of the city; (2) social problems of urban life that usually accompany the advent of industry in a neighborhood may now appear in the areas of the city that have been relatively free of these problems. These problems include: (a) depressed residential housing values; (b) increased population mobility and turnover; (c) the critical effects of this population mobility on such local institutions as churches, schools, and commercial establishments; (d) higher juvenile delinquency rates which usually accompany industrial areas; and (e) changing patterns of transportation and commuting arising with shifts in locational trends of industry.

LEO G. REEDER

University of Minnesota

Homer Hoyt on Development of Economic Base Concept

Formulas Seeking to Explain Size of Cities

THE economic base concept developed out of the need to explain why different cities or urban regions have attained their present population and to furnish a basis for estimating their future growth. Formulas have been evolved that sought to explain the size of cities by a mathematical equation. The so-called rank-size rule of Zipf¹ set forth the proposition that, if the cities of the United States are arranged in order of their population size, the first city will have approximately twice the population of the second, three times the population of the third, and so on, until the largest city is found to have about 100 times the population of the 100th city, and 1,000 times the population of the 1,000th city. If the population in the corporate limits of American cities were taken for one former census period, there was a remarkable correspondence to this theory. If it continued to apply everywhere, we would need to know only the population of the largest city in the country and the rank of the other cities to determine their population at any time. Investigation into geographic or economic factors supporting individual cities would be unnecessary if this universal law determined the size of cities. Unfortunately for those

who would seek these royal roads to city size and growth that would involve no effort, I found that when cities and metropolitan areas of the United States, Canada, Russia, Japan, Great Britain, Germany, France, Italy, India, China, Australia, and Latin America are ranked according to their size in the latest census, there is a wide variation from the rank-size rule so that it cannot be used even to obtain a rough approximation of the size of any urban region.²

Just as an easy way has been sought to determine why cities have reached their present size, so the future size of urban regions has often been based upon the projection of past trends of the growth of the given city. This method has proved to be entirely unreliable in recent periods. Some cities which had an extraordinarily rapid growth for a few decades have reversed their trend. Thus, Akron, Ohio which increased in numbers by 201.8 percent from 1910 to 1920 and 22.4 percent from 1920 to 1930, declined 4 percent in population from 1930 to 1940. Chicago, the fastest growing large city of the 19th Century stood almost still after 1930. Key West, Florida had a rapid growth from 1850 to 1890, then declined sharply from 1890 to 1930, and then doubled its number from

¹ George Kingsley Zipf, *Human Relations and the Principle of Least Effort* (Cambridge: Harvard University, 1949).

² Homer Hoyt, "Is City Growth Controlled by Mathematics or Physical Laws?" *Land Economics*, August 1951, pp. 259-262.

1940 to 1950. Instances could be multiplied showing abrupt breaks or changes in the slope of the population curve.

Other forecasts of the population growth of given urban regions have been based on the increase of births over deaths in the particular city. If natural increase determined the population of any city, we would expect that cities or urban regions everywhere would show a somewhat uniform rate of growth. The fact is, however, that there is the greatest variation between the rates of growth of urban areas in the same state in any census period. In New York State, for urban places of 10,000 population or more for the period 1940 to 1950, Watervliet, Hornell, and Amsterdam declined from 3.3 to 5.7 percent, while Long Beach City gained 72.5 percent. In Ohio, population changes from 1940 to 1950 range from a loss of 10.2 percent at Martin's Ferry to gains of 67 percent at Bowling Green and 100 percent at Berea. It is not necessary to cite examples in all the other states. The outstanding fact of our economy is migration to centers of employment and the outflow of families from the center of metropolitan areas to the suburbs. Local birth rates have little significance because, with freedom of movement, families migrate to places of economic opportunity. Most of the increase of population of our rapidly growing urban areas is due to innmigration.

Importance of Economic Base Concept in Determining the Size of Cities

Employment opportunities determine the size of most cities except tourist resorts. On examination it is realized that there are certain types of employment which we call basic that are the primary cause of urban growth. These are the industries and trades which produce goods or services for export outside of the given urban community and which bring into the community the means of payment for the food, raw materials and manufactured products which the community itself does not produce. These basic workers require the services of retail merchants, local government workers, local transportation and utilities, builders, doctors, dentists, and other professional workers; and these workers who administer to the needs of the basic workers are called service workers.

Evolution of Economic Base Concept

I developed my first concept of the economic base while Principal Housing Economist of the Federal Housing Administration in 1936.³ We had the problem of rating cities in every state of the Union as to their prospects for future growth in employment for the purpose of giving every urban region a grade, which would be part of the total rating of any single house for mortgage risk insurance purposes. We considered that mortgages would be sound in any urban region that had prospects for a moderate increase in total employment, but that there would be a risk element in any community faced with the outlook for declining employment that would create vacancies in houses.

I was called upon to devise a working tool that could be quickly applied to one large city and one small city in each of the 48 states, which would be used as bench marks for rating other cities by the Federal Housing Administration underwriters.

Confronted with the problem of analyzing the hundreds of different kinds of employment in thousands of cities in the United States, I sought at once to reduce the employment types we would study to the ones that controlled all the rest. I was not familiar with theories suggesting in one form or another the idea of basic employment, but I remembered that the engineers of the Illinois Bell Telephone Company, in estimating the future growth of the Chicago region, has studied the prospects of growth of steel, meat packing, furniture and other industries which they considered basic as being the fundamental determinants of population.

Accordingly, I took the number employed in manufacturing (after deducting manufacturing entirely for local consumption), the number of workers in wholesale trade, state and federal offices, non-local transportation and the workers in hotels as the basic employment. We did not have in 1936 any reliable data on the number of workers in service lines. On the basis of studies in York and Lancaster, Pennsylvania, which indicated that the number of service workers were equal to the number of basic workers, I assumed that a 1-to-1 ratio existed in every city. Using this technique we made economic base studies of

³ The first published account of the economic base concept as I developed it was in: Arthur Weimer and Homer Hoyt, *Principles of Urban Real Estate* 1st ed. (New York: Ronald Press, 1939).

48 large cities, and 48 small cities, one each in every state, with a force of 6 men in six weeks' time. Time was of the essence because the mortgage risk system had to be set up to take care of actual loans being processed in large volume. The primary purpose for originating the economic base method was to make forecasts of future population and employment in every city. We were interested in determining what proportion of any city's basic employment was manufacturing, state or federal government, wholesale trade, transportation or tourists, only to narrow the issue and to facilitate the process of making speedy forecasts. For instance, when we determined that Detroit was mainly supported by the automobile industry in various forms, we concentrated upon the future prospects of that industry and did not devote attention to other industries in the short time interval we had for the work. In the work of the Federal Housing Administration we were primarily interested in the number of jobs because that would be the primary factor in the demand for housing. The flour mills of Buffalo or the iron mines of the Mesabi Range created a great money income for the community; they might still give rise only to a limited need for houses, if they employed machinery that required few operators.

This emphasis upon the future number of jobs, and not upon money income, is still the important factor in studies for housing agencies and plan commissions.

*Applications of Economic Base Concept to
Estimates of Population Growth for
Plan Commissions*

As Director of Research for the Chicago Plan Commission 1941-1943 and as Director of Economic Studies for the Regional Plan Association of New York 1943-1946, I applied the economic base method to the problem of determining the future population of urban areas. In the monograph I prepared for the Regional Plan Association, *Economic Status of the New York Metropolitan Region in 1944*, I derived the ratio between basic employment and service employment by actual tabulation of every type of employment. Then it was found that the ratio between basic and service employment varies between different urban regions. In the survey of the complex community of the New York region, with its hundreds of different industries, it was impossible for a small staff in two years to

analyze the prospects of every industry in detail. Accordingly, I took trends of past growth as an indication of future growth unless I found reasons to expect a reversal of the trend. My main purpose again was to estimate the future population of the New York region and not to determine by meticulous methods how much of its basic support was derived from manufacturing, wholesale trade, the Port or hotels, although the effort was made to make this breakdown as accurate as possible.

*Applications of Economic Base Concept to
Land Use Requirements*

It was but a natural extension of the economic base concept to apply it not merely to make forecasts of future population but also to make estimates of future land uses. In a monograph I prepared for Harrison, Ballard and Allen in 1948, in their rezoning study for New York City, I estimated future requirements for industrial space in New York City by taking estimated future employment in each type of manufacturing and the amount of factory building area used per worker in each type of industry as revealed by the surveys of the Consolidated Edison Company. In 1951 I made estimates of future requirements for stores in Arlington County, Virginia by estimating future population, income and retail purchases and showing store areas that would be required for the estimated volume of business.⁴ I have just completed similar studies for Fairfax County, Virginia, Montgomery and Prince George Counties, Maryland.

Money Income. In a survey of Brockton, Massachusetts areas in 1948, I emphasized the flow of money income generated by basic employment in order to show the effect of increased payrolls upon the region's economy.⁵ The shoe industry was the chief basic support of Brockton, so a survey was made of the shoe industry of the United States to determine Brockton's competitive position.

The economic base concept thus evolved in my own work as a working tool to solve practical problems for which an immediate answer was required. In developing the

⁴ Homer Hoyt Associates, *Economic Survey of the Land Uses of Arlington County, Virginia* (Prepared for County Board of Arlington County, Virginia) September 1951.

⁵ Homer Hoyt Associates, *The Economic Base of the Brockton, Massachusetts Area*.

theory of the concept, it is desirable to define the terminology and where the money, the staff and the time is available to refine the methods and to work them out to their logical conclusion. Consequently, I would like to point to some excellent studies in this field that have contributed greatly to the scientific stature of this concept. I would like to review some of the elements of the subject and indicate the progress that has been made.

Exports and Imports. The basic idea of exporting and importing is derived from foreign trade. However, it is possible for a nation like the United States with a diversity of climate and with a great range of mineral resources to be almost self supporting. We do import tin, manganese, petroleum, natural rubber, coffee, tea and many other commodities and export cotton, wheat, manufactured articles, etc. but we could live even if cut off from the world. However, no city or urban region consisting of houses on paved streets could live very long if cut off from its food, raw materials and manufactured products, which it does not produce. Urban regions must produce exports to pay for these imports.

Measuring Economic Base in Dollars. It would be desirable to have an exact monetary accounting in every community and to show the dollar volume of goods shipped out of the community, the monetary income from investments, pensions, and the monetary payments for food, raw materials and other products shipped into the community. There would thus be a balance sheet of inflow and outgo as in the case of foreign trade. However, this would be a prodigious research undertaking unless confined to small communities.

More Accurate Determination of Basic Employment. John W. Alexander⁶ has made the most accurate breakdown of basic and service employment by ascertaining from records of manufacturers the percentage of their products shipped outside of Madison, Wisconsin and by determining accurately the number of basic employees in every line. This will serve as a model for a definitive study of the economic base in any urban region. Instead of taking total employment in any industry that is predominantly basic as entirely basic, a separation is made be-

tween the proportion of the product used locally and that exported.

Geographic and Economic Background of Regions. My first surveys of the economic base were made for individual cities regardless of their regional setting. I have always recognized that cities and urban regions are linked together and that basic studies should first be made of economic and geographic regions.

Ratio of Basic-to-Service Employment. Edward L. Ullman has made a tabulation showing that the ratio of basic to service employment varies from 1 to 0.8 for smaller cities like Auburn, Washington; Oskaloosa, Iowa; Medford, Oregon; Brockton Massachusetts; Albuquerque, New Mexico, to 1 to 1.4 for cities such as Wichita, Kansas, 1 to 1.56 for the Denver metropolitan area, 1 to 1.7 for the Cincinnati metropolitan area (Roterus), and 1 to 2.1 for the New York Metropolitan area. In the Washington, D. C. and Detroit metropolitan areas and the State of New Jersey, the ratio has been 1 to 1.1.

It seems to me that the ratio between basic and service employment not only varies between urban regions but that it will change in the same region over a period of time for the following reasons: (1). Wealthier communities will support more in the service lines than poorer communities. (2). In time of national emergency there are fewer in service lines than normally. In the Washington, D. C. area, the ratio between basic and service dropped from 1 to 1.54 in 1940 to 1 to 1.08 in August 1951, after the outbreak of the Korean War. (3). In periods of heavy unemployment, relatively more will be in service lines, because those on relief will support some of the workers in service activities. (4). One-industry cities or mining towns will support fewer in service lines than diversified cities because the service lines contain fewer wholesalers and financial institutions engaged in distributing diversified products.

Regions and Segments of Regions. The normal unit for analyzing the economic base is the metropolitan area, or the area in which people can work in any one part of the region and live in any other part of it. The economic base determines the employment for an economic region in its entirety. The population of various segments of that region is determined by allocating total population on the

⁶John W. Alexander, *Economic Base Study of Madison, Wisconsin* (Madison: School of Commerce, University of Wisconsin, 1953).

basis of the amount of vacant land suitable for new growth, transportation to places of employment and social prestige.

It may be necessary to analyze a segment of a metropolitan region. In a survey of Rye, New York, a suburb of New York City, all the commuters who work in New York City regardless of what they do in the city can be regarded as basic workers since they bring in money from outside Rye. In a survey of New York City proper, part of the workers in the retail trades are basic because part of the sales of the stores are derived from the metropolitan area outside of New York City. In Minneapolis, Kansas City, Little Rock and many other cities, a substantial amount of department store sales come from outside the metropolitan area and to that extent part of the department store workers are basic workers.

Fundamental Changes in Regions. The fundamental reason why cities gain employment is that industries there can produce more cheaply or serve a larger market than competing industries in other cities. Comparative costs of production which are influenced by transportation rates, taxes, labor efficiency,

proximity to raw materials and other factors are of vital importance in forecasting trends in basic employment.

Definition of Terms. Richard B. Andrews in a series of articles in *Land Economics* has made significant contributions to economic base theory that have explained the origin of the concept, refined the methodology and aided in standardizing the terminology.

Future Economic Base Studies

Future economic base surveys of new urban regions will provide new factual data for establishing ratios between basic and service employment and in determining more accurately the proportion of basic workers in each type of activity. The economic base survey will be recognized as the first step in making the master plan or a new zoning map for any urban region, because it is the essential basis for making a rational estimate of future population and future land use requirements.

HOMER HOYT

*Homer Hoyt Associates,
Washington, D. C.*

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Editor's Note. The bibliography listed below does not attempt to be all-inclusive. Its purpose is to direct the reader to significant and/or basic research study materials. A number of persons have made suggestions or checked over this list but the person chiefly responsible for its compilation and form is Katherine McNamara, Librarian, Department of City Planning and Architecture, Harvard University.

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Book Reviews

The Decline of Agrarian Democracy. By Grant McConnell. Berkeley and Los Angeles: University of California, 1953. \$3.75.

The thesis of this book is that agrarian democracy has disappeared from the American scene. Grant McConnell, the author, declares that "more than half a century has elapsed since the death of the last great mass movement of farmers in America."

The author looks back on Populism which he believes was democratic in character. "Agrarianism spoke in the name of all," he writes. "The enemy which it challenged was power."

The book begins with farming conditions in the 1890's and reviews them in chapters on "The Old Tradition," "The Economic Setting," "New Beginnings," and "The Heirs of Populism." In these chapters McConnell makes a clear analysis of the early growth of agricultural education and the struggles which went on to establish Extension Service and the demonstration method. There is mention of such early farm organizations as the National Grange and the Farmers' Alliance. There is a sympathetic mention too of the Farmers Union which the author thinks "has not in itself been a moving force in our political life, but has had great importance as an irritant and a stimulant for more important forces."

Much of the book is concerned with the growth of the American Farm Bureau Federation which appeared in 1920. The author spends a great deal of time tracing the development of the county agent system which sprang up during World War I. It is his belief that the American Farm Bureau Federation came into power because of its relation with the Extension Service and the land grant colleges.

Because of this alliance with Extension Service, Mr. McConnell asserts that the Farm Bureau has sabotaged every agency within the Department of Agriculture which has ever attempted to work directly with farmers. He takes as case studies the struggle which went on in the late 30's over the Agricultural Adjustment Act programs and the Farm Security Administration. Later he

tells in detail some of the conflicts which went on between the Soil Conservation Service and the Farm Bureau. The author is extremely critical of the Farm Bureau and feels that it has represented only the larger farmers. McConnell believes that its interests in decentralization and economy are really only a method of attacking government agencies over which it does not have complete control.

The Farm Bureau is pictured as a ruthless political organization shaping farm policy on the basis of the decisions of a few people. Former President Ed O'Neal of Alabama is represented as a high powered lobbyist using the Farm Bureau to ride rough-shod over the wishes of Congress and the Department of Agriculture.

McConnell concludes there is an "apparently senseless rivalry of large and small farmers set against each other." In his mind the Farm Bureau is the villain which has stirred up this discord.

As an official of the Ohio Farm Bureau Federation I cannot agree with the central theme of this book which is that agrarian democracy is dead. In my experience with the Farm Bureau in Ohio I can truthfully say that I have never known a time when farmers have had a better opportunity to participate in policy development. This year farmers in every one of the forty-eight states helped advise Secretary of Agriculture Benson on a long range farm program through meetings and discussion groups organized by Farm Bureau.

The basic unit in Farm Bureau is the county organization. These county organizations are federated into a state organization, and the state organizations in turn are federated into the national organization. This allows for a maximum degree of local autonomy. Policy in the Farm Bureau is reached through a more democratic process than in any organization which I know about. Of course there are some farm leaders who try to set themselves up as self-appointed spokesmen for the farmers but on the whole these people are few and far between in the Farm Bureau.

One of the real defects in the book is its failure to recognize the importance of the remarkable growth of cooperatives among farmers. Brief mention is made of the fact that Ed O'Neal was more interested in direct legislation than in cooperatives but nowhere does the author tell how cooperatives have developed since 1890. The fact of the matter is that agrarian democracy has never been more healthy and alive than it is today. There are 9977 farmer marketing and purchasing cooperative associations in the United States, each of these governed by a democratically elected board of directors who each year report their activities to an open meeting of farmers.

Many of these cooperative associations are sponsored and organized by the state and county Farm Bureaus. Among the strongest cooperatives in the United States today are those to be found in Ohio, Indiana, Illinois, and Michigan, and in each instance it is the Farm Bureau which has led this development.

The book is well written and the author undoubtedly has spent a great deal of time in bringing his material together. Unfortunately, many of the statistics are no later than 1946 and much has happened in American agriculture within the past seven years. Farm leaders and educators will find the book worth reading.

C. MAURICE WIETING

*Vice-President and
Director of Information and
Education,
Ohio Farm Bureau Federation*



Bolivia, Land, People and Institutions. By Olen Leonard. Washington, D. C.: The Scarecrow Press, 1952, pp. 297. \$6.00.

Bolivia is a land of towering mountains, humid lowlands, derby hatted women and fabulous tales of mineral wealth. Professor Leonard forgoes the opportunity to write a popular book about this land of contrasts to concentrate on the simple folk of Bolivia. He discusses their humble dwellings, their continuous struggle for life against hunger and disease, and the patterns of living which have evolved.

The book is divided into five parts. Regional Diversity introduces the reader to Bolivia. Next is a discussion of People, primarily in terms of population growth and movement. Part III discusses the Man-Land Relationships, concentrating on settlement and tenure patterns.

Part IV deals with the Social Institutions, family, school, church, government and housing. The last section discusses levels and standards of living. A large number of photographs have been assembled as well as many charts. These pictures of the humble people help to fill in the impression that the crude statistics and written word are unable to convey.

Few books have appeared in English about Bolivia and virtually nothing which deals in any scholarly way with the internal social conditions and problems. This book provides details on the social situation in Bolivia today which will be useful to the occasional student and scholar of tomorrow who wishes to know more about Bolivia, or about the highland Indians of the southern Andes.

Professor Leonard spent some two years in Bolivia. Several bulletins coming out of his studies there have been integrated into this book. His experience and professional work gives him the background and material needed to analyze the nation in sociological terms.

On the negative side is the somewhat pedestrian way in which the book is written. There are too few word pictures about a country and a people who offer many opportunities for such expression. The pictures document the book and are a contribution, but the technical process chosen is presumably less costly but also less effective. An occasional error is found such as on pages 37 and 38 where the table suggests a population increase of 9.7 per cent for Oruro and the text a decrease of almost ten percent.

Answers to the problem of Bolivians will be sought in vain. This is a discussion of the social situation and not of the development of new goals of social welfare. In this objective the book is a definite contribution to our knowledge of the area.

LAWRENCE WITT

Michigan State College